# The Builder.

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## ILLUSTRATIONS.


Christian Scientist Church, Victoria Park, Manchester ..... .....Mr. Edgar Wood, A.R.I.B.A., Architect.

New Public Baths, Chelsea.....Messrs. Wills and Anderson, Architects.

New Church, Spiddal, Co. Galway .....Mr. W. A. Scott, A.R.I.B.A., Architect.

The Mill House, Aldeburgh ..... .....Mr. R. A. Briggs, F.R.I.B.A., Architect.


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## *Reinforced Concrete.*

IN a series of articles published last year, we set forth some of the more important facts relating to the new building material, consisting of concrete and steel combined in such a manner as to present distinctive characteristics of the greatest value to architects and constructional engineers. The employment of this material in such a manner as to meet the varying requirements of every-day practice requires something more than a familiarity with the properties of concrete and steel, for the designer must be qualified to analyse the stresses established or likely to be established in every part of the structure under consideration, and to apply the results obtained by recent investigation when calculating the proportions of the various members as well as the relative proportions of the two constituents, and the exact disposition of the steel reinforcement. Finally, he must be imbued with complete confidence in the strength, stability, and durability of the structure designed. As in other departments of constructive work, such confidence comes only with knowledge, based on theory and confirmed by practice. We may add the remark that if theoretical knowledge is itself founded upon observed facts, as it actually is in every branch of constructional science, there is an additional reason for accepting theory as a reliable guide.

Much still remains to be learned with regard to the remarkable properties of concrete when reinforced by steel. Considère and other eminent European scientists are still pursuing their investigations, and, as we pointed out in a recent "Note," an influential joint committee has been appointed in the United States for the purpose of collecting facts and formulating conclusions. In this country, architects and engineers alike appear to remain in a state of expectancy, and are making no effort to throw light upon this most interesting subject. A recent work by Mr. Charles F. Marsh* is particularly welcome at this juncture, and the comprehensive review of reinforced concrete therein presented cannot fail to stimulate interest in a material whose practical utility is beyond question. This treatise, including 530 quarto pages, obviously represents an enormous amount of labour, and, as a summary of information hitherto to be found only by the laborious process of searching through sundry foreign treatises, the proceedings of sundry engineering institutions in various parts of the world, and innumerable articles in technical journals published in Great Britain, the Continent, and the United States, it ought to be widely appreciated by architects and engineers who desire to make a systematic study of reinforced concrete construction.

* "Reinforced Concrete," by Charles F. Marsh, A.M.Inst.C.E., A.M.I.Mech.E., with 512 illustrations and diagrams. London: Archibald Constable & Co., Ltd. 1904.

In Part I. the author gives a good "General Review of the Subject," and, among other questions, refers to the history of reinforced concrete, its limited employment in England, and its advantages and disadvantages. Regret is expressed "that engineers and architects in England are so conservative, one might almost say prejudiced in their ideas, that many of them will not use this form of construction, even though their Continental and American *confrères* have proved to them so clearly its usefulness and economy, and, above all, its safety." We quite agree with these remarks and believe that in this particular respect engineers are even more conservative than architects. But the fact must not be overlooked that reinforced concrete can never come into general use until our building regulations, and especially the Metropolitan Building Act, are amended so as to permit the economic possibilities of the material to be fully developed. So long as building rules continue, for some purposes, to base the proportions of structures upon the strength of brickwork, so long will the use of superior material be retarded, and progress stifled. While dealing with this point, Mr. Marsh refers to the regulations which govern building construction in several Continental and American cities, and shows that intelligent recognition is therein made of the modifications rendererd possible by the employment of reinforced concrete.

Under the sub-heading entitled "Advantages and Disadvantages in the Use of Reinforced Concrete," the reader

will find a good deal of useful matter. The fire-resisting qualities of reinforced concrete are emphasised by official reports, which have already been printed in an excellent trade catalogue known to many of our readers. This testimony, although reliable, is somewhat old, and, even assuming that the conclusions deduced from the great Baltimore fire were not available until after the author's pages were in type, some records of more novel character could have been given with advantage. An important point made, however, is that, even after exposure to severe fire and water tests, the elasticity and strength of reinforced concrete is practically unimpaired. The immunity of the reinforcing metal from rust is clearly a meritorious characteristic, which is demonstrated by several investigations quoted in this section of the treatise. Various opinions have been expressed as to the impermeability of the new material by water. For details of some of these we must refer the reader to the work itself. The author again quotes largely from the catalogue beforementioned, repeating data obtained as long ago as 1886 in the city of Grenoble, but the evidence is of little assistance in a general way, the most valuable guidance being afforded by the statement that where resistance to the penetration of water is required, "the concrete should be of sand and cement only, and in proportions not more than three to one." We may add that it is frequently desirable to finish the surface of water-tanks and similar structures with a rendering of neat cement. So far as concerns durability, the statement that "reinforced concrete compares very favourably with steel and iron structures" certainly does not err on the side of exaggeration, for, apart from the constant painting and supervision required by steel structures, we have no reason to believe that they can possibly endure for periods anywhere approaching those attained by works in simple concrete. So far as reinforced concrete is concerned, sufficient evidence is afforded by pieces of iron embedded in lime concrete hundreds and even thousands of years, that the life of the combined material is not likely to be limited by destruction of the metal. Several other points relative to reinforced concrete are discussed in the general review made by the author. All of these are of importance, but in view of the voluminous records awaiting attention in succeeding parts of the work we cannot notice them individually. We must, however, take exception to the suggestion that the work of designing may advantageously be restricted to those who are interested in the different systems of reinforced concrete construction. Our view is that architects ought to make it their business to master the principles involved, so that they may be able to apply reinforced concrete freely and confidently, as timber, brick, and stone have been applied in the past, for the realisation of architectural conceptions. So long as the mind of the designer is fettered by the requirements of another intelligence, it will be impossible to obtain really satisfactory results. In other words, if the new material is to achieve the success it deserves in artistic building construction, the architect must learn to think in concrete-steel as he has hitherto thought in brick and stone.

Part II., entitled "Systems Employed," is probably the most complete summary of the kind yet published. It includes detailed descriptions and illustrations of more than forty different patented systems of construction, of which thirty are of Continental, seven of American, and only one, we are sorry to say, of English origin. This analysis serves to demonstrate the backwardness of our own country, and, taken in conjunction with the fact that several of the Continental and American patentees have established agencies here, affords one more suggestion that we no longer aspire to lead the world in the way of progress, but are reluctantly dragged forward by more enterprising nations. Most of the information presented in the present part appears to have been collated from catalogues and pamphlets issued by the firms concerned, but it is no less valuable for that reason. Only a few of such publications find their way into Great Britain, and many of them, being published in foreign languages, are not so convenient for perusal as might be desired. The summary made by Mr. Marsh, although merely descriptive, will be found extremely useful for purposes of comparison, and should afford many valuable hints to the studious reader. Notwithstanding the numerous patents extant, the main principles of construction are not, and cannot be, protected, and, as a general rule, the valid patents generally rely upon comparatively insignificant details, and do not militate against the general use of reinforced concrete. One of the objections frequently raised against the adoption of this combination is the variable strength of concrete, which is affected not only by the quality of the cement, the character of the aggregate, and the proportions of the constituents, but also by the thoroughness of mixing. In practice, however, the variation of strength should be small if reasonable care be exercised, and if the mixing be performed by suitable machines.

In Part III. the author deals with the constitution and properties of cement, mortar, and concrete, giving data from a number of well-known authorities. He also includes a table showing the proportions of concrete as used for different classes of work by various reinforced concrete firms. While the proportions in question vary considerably, it will be seen that in some of the most reliable systems, 1 to 3 and 1 to 4 concrete are usually employed for beams and columns. Some general remarks by the author on this part of the subject will be found helpful to those requiring guidance as to the best proportions for adoption. Only a small space is devoted to "Reinforcing Metal." There is comparatively little to say about this constituent of reinforced concrete, as ordinary bars or rods are most generally employed. We observe that the author does not appear to be quite convinced as to the superiority of mild steel to wrought iron. For some special purposes wrought iron is still useful, but for ordinary structural work steel is far preferable, and, considering its greater strength and uniformity of quality, far cheaper, as well as more reliable than iron. The advice that "when steel is at a lower price than wrought iron it is always the better material to use" is somewhat curious reading, and, taken in conjunction with other passages in the paragraph relative to reinforcing metal, seems to indicate that the author's experience as a buyer and user of iron and steel has been of somewhat limited extent.

Part IV., on "Practical Construction," deals with methods employed in the erection of reinforced concrete structures. This part of the general subject would perhaps be more suitably placed after the two succeeding portions of the work, but the point is not of great importance, as the reader can easily skip and afterwards return to the present part. Under the sub-headings entitled "Moulds" and "Falsework," will be found a large amount of most instructive matter, the value of which is considerably increased by reproductions of sectional and other drawings illustrating the methods to be adopted in the construction of walls, columns, flues, beams, floors, arches, sewers, and chimney shafts. Some of the details in the next two sections on the "Treatment of Reinforcing Metal" and "Special Reinforcements" are more or less repetitive of descriptions given in Part II., and some again would have been more appropriately placed under the previous sub-heading devoted to "Reinforcing Metal." Still, the designer will gain many useful hints from a careful study of the particulars furnished as to the methods adopted by various engineers for placing and inter-connecting the reinforcement, and in depositing the concrete.

The question of "Moulding in Advance" is one that deserves much attention in connexion with many classes of reinforced concrete construction. With regard to bridges and structures, where the different members are, or should be, mutually dependent, the author is quite right in saying that "Moulding *in situ* should be universally adopted for important parts," for when moulded separately in advance, it is exceedingly difficult to insure proper connexion between the members, and, further, unnecessary difficulty and expense would be incurred in packing, transporting, and handling heavy masses of finished material. No portions of any floor should be moulded in advance, for the beams, joists, and panels have all to be combined so as to form a perfectly homogeneous structure, the slabs actually constituting extensions of the compression flanges of the beams and joists. Similar considerations point to the desirability of constructing columns on the site, but it may be remarked that there are reasons for favouring the advance moulding of compression members, and the same treatment is distinctly advantageous in the case of various details, such as lintels, sills, and portions that do not contribute directly to the stability of the structure as a whole. The advantages to be gained by moulding in advance are well summed up by the author as follows:—"(1) It is more economical to mould the beams, slabs, etc., in a shed than on false work. (2) The moulding can be carried on in all weathers, causing a

considerable saving in time. (3) There is more freedom and space where no falsework, or very little is, employed than with the mass of props, boxes, and staging rendered necessary when moulding *in situ*. (4) The erection can go on without intermission. (5) The structure will bear its final loading immediately the parts are in place. (6) The building up of the structure is greatly facilitated in consequence of the beams, slabs, etc., merely requiring lifting and placing in position. (7) The pieces can be tested, if required, before being placed in position." As stated above, the chief reason against the separate moulding of members in ordinary building construction is to be found in the difficulty of insuring absolute connexion between them when built together, but if this obstacle could be got over, the practice would have everything in its favour. The last two sections under the head of "Practical Construction" relate, one to the moulding of ornamental work and facings—a subject of special interest to architects—and the other to methods of forming the hinges in reinforced concrete arches of long span.

"Experimental Research and Data Deduced Therefrom" is a title which promises most interesting matter for study, and in Part V. Mr. Marsh clearly justifies anticipation of the kind. There is no finality in experimental investigation into the properties of reinforced concrete, and it is not to be expected that a volume of such portentous dimensions as that now before us should contain records of the most recent investigations. Still, Mr. Marsh is very nearly up-to-date, a result upon which he is to be congratulated. Some of the most noteworthy records presented in this part are those referring to the ratio between the coefficients of elasticity of concrete in compression and those of iron and steel, to the limiting stresses for concrete in compression and in tension, to the resistance of concrete to shear, to tests of reinforced concrete beams, and, finally, to the remarkable properties of "hooped" concrete columns, as recommended by the distinguished French engineer, M. Considère. The names of the investigators quoted as authorities by Mr. Marsh sufficiently vouch for the reliability of the data given. A suggestive recommendation made at the end of Part V., is that "the present method of treatment may not be the best, and that instead of resisting the stresses by placing bars or wires in such positions that they may take up the direct stresses, greater strength will be obtained by so placing the reinforcement, that instead of directly resisting the imposed stresses, they may always act in tension, the concrete being compressed, whatever the nature of the main stresses may be." The elaboration of this idea, which probably has been suggested to the author by the remarkable investigations of M. Considère, would lead to the design of members in such a way that swelling of the concrete might be resisted by the tensile strength of reinforcement disposed in rings, spirals, or netting.

Part VI., on "Calculations," may be regarded as the most important chapter in the entire volume. It is divided into three portions :—I., Necessary Hypotheses; II., Loads, Bending Moments, Shearing Forces, etc.; and III., Formulæ.

At the outset we must say that none of the many theories hitherto propounded are more than approximately correct. Some rules are expressed in the most approved mathematical form, and present a sufficiently terrifying appearance to practical men who have never wandered far into the intricacies of this fascinating branch of science, or to those who may have forgotten much of the knowledge acquired of it at school or college. Other formulæ are expressed in far more simple terms, and others again are purely empirical. At the present time, it is exceedingly probable that rules of the last-mentioned class may be quite as reliable as those stated in the most severely mathematical terms. Still, it is desirable that all formulæ should be expressed in correct form, with due account of all essential factors. Then, as further data are ascertained, the coefficients employed will simply require correction, and the results obtained will approach more closely to absolute accuracy than is at present possible. It is now necessary to make certain assumptions upon which to base calculations, and these are the hypotheses which form the subject of examinations in the first portion of Part VI. Among the usual assumptions several are admittedly inexact, and to those who desire information on the point we recommend a study of the opinions and arguments collected by the author. We may pass over the second portion of Part VI., as the subject matter is common to many text-books on applied mechanics. The reader ought to note, however, that the author reproduces a long extract from a paper by Mr. W. Dunn, F.R.I.B.A., published in the *Journal* of the Royal Institute of British Architects, on the bending moments on slabs. This subject has been very little discussed in treatises dealing with the strength of materials, and the references here made should be very generally appreciated.

The third portion of Part VI., consisting of some 125 pages, chiefly filled with formulæ and mathematical demonstrations, cannot well be discussed in any detail in this article. We must, therefore, be content to make a few remarks while passing over the pages in question. The author first deduces two general formulæ for members in direct compression, one for reinforcement consisting of small sections, and the other for reinforcement composed of large sections. Rules derived from Euler's formula are also given for checking resistance to flexure in the case of columns having a length of more than 20 diameters, and values of the co-efficient ($k$) are given, corresponding with different methods of fixing the ends of the members. Next, we have a discussion of columns in which longitudinal and hooped reinforcement are incorporated, the references to this type of construction being largely based on M. Considère's articles, published last year in "Le Génie Civil." Some additional notes, based on experiments by Mr. Dunn, are useful as supplementing the conclusions of Considère, but further investigation is required before the precise influence of this ingenious system of reinforcement can be calculated with accuracy. The following section in the same part deals with "Longitudinal Direct Stresses in Pieces Subjected to Bending," the method of treatment adopted being practically that used by M. Christophe in his well-known work, "Le Beton Armé." It should be observed, however, that the formulæ here given differ from those of M. Christophe in the respect that the stress-strain curve is considered as parabolic by the author. The portion of the volume to which we now refer contains a very large number of equations for application to rectangular slabs and beams with single and double systems of reinforcement, and to T-shaped beams incorporating different systems of reinforcement. It also includes a series of most useful diagrams showing positions of the neutral axis, and unit bending moments for various percentages of metal in slabs and beams, as well as several tables calculated from the formulæ for purposes of comparison. Speaking generally, the conclusions expressed by the author are quite in accordance with those accepted as correct by authorities on reinforced concrete. He shows that double reinforcement is very uneconomical, and that the employment of large rolled sections is, for the same reason, not to be recommended. At the same time, we may remind the author that reinforcement in the compression area of a beam may sometimes prove economical in practice by permitting the application of concrete construction in places where it would otherwise be impossible, or where the adoption of intermediate supports would otherwise be necessary. At the end of the article relating to slabs, we find the following sentence :—"It will be seen that for a steel reinforcement the depth of the slab, for any given bending moment, will be greater than when a wrought iron reinforcement is employed, but the percentage of reinforcement is much less for steel than wrought iron." This pronouncement undoubtedly represents conclusions drawn from a diagram below which it is printed, but if read separately it would be misleading, and must not be taken as affording any true criterion to the relative merits of iron and steel: As a matter of fact, in general practice, the depth of a slab reinforced by steel of given volume or weight is less than the depth of a slab reinforced by an equal volume or weight of iron; and it would be quite easy, by using the author's formulæ in a different manner, to demonstrate the superiority of steel over wrought iron.

"Shearing Stresses in Pieces Subjected to Bending" is the heading of another article in Part VI. which ought to be studied with care, as the influence of shear on concrete has not invariably been accorded the consideration it undoubtedly deserves. Ordinary and special forms of longitudinal reinforcement, in fact, offer no resistance to shearing stresses in the concrete surrounding the metal. In the succeeding article of the same part, a summary is given of various methods of calculation for members subjected to bending, including references to those of Hennebique, De Lafarge, Bonna, Chaudy, Ritter, Considère, and Christophe. We miss here any mention

of several noteworthy theories propounded by various American authorities on reinforced concrete, an omission which scarcely does justice to the thorough manner in which the study of the subject has been taken up in the United States. The author next sets forth the outlines of "A Proposed Method of Reinforcement and Calculation." The suggestions here made are decidedly original and are supported in principle by the results of many of the tests already quoted in the treatise. To quote the author's own language:—"The best results should be obtained if a hooping were provided along the whole length of the piece, which would prevent the swelling of the concrete under compressive stresses, and some form of reinforcement inserted on the tensile side which would induce compressive stresses in the concrete." For details as to the manner in which Mr. Marsh proposes to apply metal for the purpose of attaining the ends here outlined, we must refer our readers to the treatise. No attempt has yet been made to test this method of reinforcement, but we are quite inclined to think with the author that it is a strictly rational system, and that the resistance obtained by its employment would considerably exceed that afforded by any method at present employed. The remaining matter, under the heading of "Calculations," relates to rules for the design of pipes, circular reservoirs, arches, and other structures subjected to direct stresses and bending moment combined, and, finally, to a graphical method for determining the stresses to be resisted in domed structures, the treatment in question being based upon a paper contributed by Mr. Dunn to the "Transactions of the Royal Institute of British Architects," for March, 1904.

Part VII. is entirely descriptive, being occupied with general particulars and illustrations of structures erected in reinforced concrete. Among these are examples of houses, churches, warehouses, bridges, reservoirs, and many other types of constructive work. This portion of the work is most interesting, and serves to show the wide adaptability of the material.

An Appendix, in which the chief feature is a fully detailed account of M. Considère's test to destruction of the Pont d'Ivry, is a fitting conclusion to a volume, which, although it may lack the authoritative character and originality of a work by an investigator who has made reinforced concrete the object of experimental research, admirably attains the aim of the author "to place before engineers, architects, and others a complete treatment of the subject of reinforced concrete in so far as is possible at the present day."

EMPLOYMENT OF PLUMBERS.—In the Municipal Section of the Congress of the Sanitary Institute at Glasgow, it was resolved:—"That it is necessary to the effective administration of the Public Health and Water Acts that the relative authorities be recommended and empowered to require that the competency of plumbers employed to execute or inspect plumbers' work under the regulations of those authorities shall be certified by the Plumbers' Company under the conditions appertaining to the National Registration of Plumbers, or by such other body as may be set up by Statute, or be approved by the Local Government Board."

## NOTES.

**Architects' Drawings.**

WE recommend our professional readers, all of whom are liable to become practically interested in the question in a very serious manner, to read the very clear and logical statement which has been addressed, by the solicitors for the defendant in the recently tried case, to the individual members of the Council of the Institute of Architects. There is no question that the attitude which the Law Courts are taking in regard to the application of the precedent of Ebdy *v.* M'Gowan constitutes a most grave attack upon the architectural profession, and that the general adoption of such a ruling would be disastrous to them as well as absolutely unfair and unreasonable. We are speaking of course only on the general principle; and on that account purposely avoided, in our article last week, making any direct reference to the case which suggested the consideration of the subject. But the matter is exceedingly serious, and if the law is to be interpreted as judges seem disposed now to interpret it, we can only say that the law *has got to be altered.* Our own opinion, however, is that, owing to a misconception as to the object of architectural drawings and as to the function of an architect, "Ebdy *v.* M'Gowan" is being used to cover cases to which it does not apply. Of the failure, so far, of the Institute of Architects to take any steps towards defending the profession we will say no more at present, hoping that the Council, which meets next week, may yet recognise its duty to the profession of which it is the central representative body.

**Landlord and Tenant.**

THE case of Woodall *v.* Clifton should be brought to the notice of lessees of real property, as it decides an important and comparatively new point. In two leases of land for ninety-nine years an option was contained to purchase the land or some part thereof at a named price per acre, which might be executed "at any time during the said term," and the two leases were in substantially identical terms save that in one the option was granted to the lessee, "his heirs and assigns," whilst in the other it was reserved to the lessee, "his executors, administrators and assigns." These leases were granted respectively in 1867 and 1869, and both leases have become vested in the plaintiff. The plaintiff exercised the option to purchase the whole of the land comprised in both leases, but was met by the contention that the options were invalid in law as offending against a principle known as the rule against perpetuities; that is, a rule which prevents any executory interest coming into force later than "a life or lives in being and twenty-one years after." Options contained in leases to renew for a further term have been held not to offend against the above rule, and it was contended that the above options were valid on the same grounds; but the learned judge held that the options in both leases were invalid since the options in those conveyances created an interest in the land which did not vest in the lessee at the time when the leases were granted—as is the case in an option to renew—but deferred the interest to the exercise of the options which might be exercised at a time outside the limit prescribed by the rule. Such an option as that above granted would seem one so natural and desirable to any layman that too much publicity cannot be given to the decision, and lessees must be careful to see that an option to purchase the premises is not deferred more than twenty-one years from the granting of their lease, unless a life or lives of living persons are also inserted in the clause giving the option.

**The Isle of Wight Coast.**

IN a "Note" which appeared in our issue of November 5 we mentioned that the Isle of Wight Rural District Council had decided to consider a Report from the county surveyor relative to the protection of the coast at Freshwatergate. It is satisfactory to learn that the Council have done more than this, for at a meeting held last week they were able to consider a Report furnished at their request by a local geologist. This Report emphasises the extraordinary fact that great quantities of shingle are being removed by Government from Whitecliff Bay, between Sandown and Bembridge, for the purpose of making concrete to be used in the construction of a new fort. In consequence of this unjustifiable action the bay has been partly denuded, and at high water the sea now reaches the base of the cliffs, a result that has not happened for at least a quarter of a century. We pointed out in connexion with the papers on "Coast Erosion," read before the Institution of Civil Engineers, that the Government "claims absolute authority over the foreshores and does nothing for their protection." From the facts now stated it is clear that the Government do something less than nothing, for at the Isle of Wight they are taking active means for the destruction of the coast. This is really scandalous, and we have every sympathy with the decision of the Isle of Wight Rural District Council to impress upon the War Office and the Board of Trade the necessity for immediate orders stopping the further removal of beach material. At the same time we should like to know what the Council propose doing for the protection of Freshwatergate. Their present inaction must not be allowed to continue.

**The Philæ Temples.**

*À propos* of the further submersion of the Island of Philæ, Mr. Somers Clarke pays a well-merited tribute to the anxiety displayed by the Egyptian Government to protect the buildings as far as possible. Admitting that there is good reason for believing that the stonework of the walls and columns will not crumble away under the influence of the water, he fears the architraves and horizontal roof slabs may be prejudicially affected by soaking for weeks at a time. From past experience we feel satisfied that the authorities will show themselves ready to carry into effect any recommendations that may be put forward by M. Maspero, the Director-General of Antiquities, for the preservation of the roof. Judging from the results afforded during

the past two years, the masonry already subject to immersion has suffered no ill, although its exterior has been washed to a cold grey tint, and the colour of painted surfaces is rapidly fading. If the same care be given to the upper portions that will be immersed when the Assuan Dam has been raised, the permanency of all the buildings should be adequately assured.

The Disfigurement of Clifton.

WE are pleased to learn that owing to the jetty difficulty, which we mentioned in a recent "Note" as a useful weapon of opposition, Sir John Aird has definitely abandoned his intention of using the Leigh Woods quarries for the supply of stone to the Avonmouth dock extension works. This decision removes a great immediate danger, but does not in any way safeguard the future, as three quarries are still being worked, one of them by the Bristol Corporation, who ought to know better. The perfectly feasible suggestion has been made that operations could be conducted on the behind-bank system, the adoption of which would not affect the quantity of stone quarried, nor the number of men employed. Still, if the stone were delivered from the front of the quarries the Avon gorge would continue to present indications of work, which are quite out of keeping in a place of sylvan beauty. It may be that stone can be obtained in this spot a little cheaper than from other sources; the same may be said of shingle filched from the seashore, but in neither case is it right to cause irrevocable injury to national property for the sake of saving a few pence per ton of material.

Impact Tests on Steel.

IN the paper read before the Institute of Mechanical Engineers by Mr. A. E. Seaton and Mr. A. Jude, the authors stated that considerable movement had been made of late towards the establishment of a shock test for steel, and afterwards expressed the opinion that progress in this direction was taking place still too slowly. The latter is a view with which we fully agree, especially as nearly five years ago we said: *"Impact tests have not received the amount of attention which their importance deserves . . . . and some of the results obtained thereby seem to indicate that the measurement of shock resistance is likely to furnish a new factor in judging the reliability of iron and steel." The objects of the paper to which we now refer are to show some of the characteristics and peculiarities of commercial wrought steel, to assist in the development of a more rational method of testing the suitability of such steels for particular purposes, and to point out a few of the peculiarities observed in the fracture of test specimens and actual parts of machinery. For steel used on structural work, subjected to steady loads only or to recurrent loads at intervals, the ordinary tension test is doubtless quite adequate. On the other hand, for steel used in structures subjected to rapidly repeated loads more or less suddenly applied, or to alternating loads, the tension test is insufficient. From the numerous bars tested by the authors they conclude (1) that the number of blows to produce fracture is a fair gauge of the toughness or anti-brittleness of the steel, and (2) that there is no relation whatever between this result and the tensile test results, except that if the impact test result is good the elongation is sure to be good; but that a steel showing high tensile strength and good elongation may be useless to resist shock.

* The *Builder*, Vol. lxxviii, p. 119.

Electric Railways.

THE report of the joint meetings of the Institutions of Electrical Engineers of Great Britain and America at the Exhibition at St. Louis last September, which has just been published in the "Journal" of the American Institution, is exceedingly instructive. The most important discussion was that on the methods and systems of using alternating current in electric railway motors. The report of the speeches makes it perfectly clear that the American engineers have completely mastered the problems of electric traction. Mr. Steinmetz, in a clearly reasoned speech, points out the different nature of the problems that have to be considered in electric traction in tramway systems in towns, in inter-urban railways, and in long-distance railways. For tramways in towns direct current at from 550 to 600 volts pressure is the most suitable, but for long-distance work the alternating current motor has found and developed a field of its own. Mr. Steinmetz, who is the author of the standard work on "Polyphase Currents," apparently has not a high opinion of the polyphase motor. The only use he finds for it is in connection with mountain railways, where the character of the work to be done is similar to that done by the motors used for lifts. The advantage that single-phase systems have over polyphase systems is that only one trolley wire is required. Another is that the motors used have a very large starting "torque," and so there is little likelihood of a train coming to rest on a steep incline at a considerable distance from the power station, and not being able to start owing to the considerable loss of pressure due to the large currents having travelled considerable distances. Mr. Sprague mentioned that the railway companies were adopting electric traction on their branch lines, because they found that this was the only way to make them profitable. Mr. Elihu Thomson pointed out that the new alternating current motor would work equally well either with direct or with alternating current, and that railways were now being built which worked primarily with alternating current, but that in the neighbourhood of towns they would be worked by direct current, the electrical apparatus on the motor-cars acting equally well in the two cases.

Fires in Country Houses.

THE past ten days have seen several fires in important country houses, resulting not only in the destruction of property but of works of art such as are often found in English mansions, and which it is impossible to replace. It is obvious that much greater care is required not only in the inspection of flues and other fire traps from time to time, but in that nightly guard which discovers a fire at an early period. It is indeed surprising that rich men who are owners of great houses do not have much more efficient watching, considering how small is the outlay for this purpose in comparison to the risk which is incurred by the absence of any such care. In some places means of communication with fire-stations, as by telephone, does not exist, and the water supply is singularly bad, the want of any means of escape too is also often remarkable. Whether warnings are of any value we do not know, but they must be given.

A Historical Atlas of London.

MESSRS. GEO. FALKNER & SONS are about to produce reprints, in slightly reduced facsimile, of eight entire maps with some sheets of selected sections to illustrate the gradual growth of the town during the XVIIth and XVIIIth centuries. The descriptive notes will be written by Mr. Randall Davies, F.S.A. Seven of the maps will be reproduced from original specimens in the Crace collection, the facsimile of Faithorne's from the copy lately secured for the British Museum. The set ranges from Ryther's map of 1604 (engraved and sold at Amsterdam by Cornelis Dankerts) to that published in 1776 by Laurie & Whittle, of Fleet-street. It includes one of the two or three engraved by Hollar in 1666-7 showing the extent of the Great Fire, and Wren's plan for rebuilding the City. The former, we gather, is the unique specimen of which the original measures 33 in. by 21½ in., which, it seems, was "reduced into one intire plat" by John Leake, one of six who in 1666 had "first described in six plats," by order of the Corporation, "an exact surveigh of the streets, lanes, and churches contained within the ruines of the City of London." Vertue made a copy of it, to a larger scale, with amplifications. We may mention that of the map engraved by William Faithorne on seven sheets for Newcourt, the only other original impression of which the existence is known is preserved in the Bibliothèque Nationale, at Paris. It is a beautiful work, delineating, to a scale of 1 in. to 150 yds., the buildings, etc., *à vol d'oiseau*. Though dated "1658" it bears internal evidence that the survey was made in the interval 1643-7, for it depicts Charing Cross, which was pulled down in June—August, 1647, *teste* Lilly, and does not show the other Eleanor Cross, in Cheapside, which was pulled down on May 2, 1643, as Evelyn records. The impression in our national collection is, we imagine, that of which the discovery was announced in 1855. A copy of it, engraved by George Jarman, was published by A. E. Evans & Sons, of No. 403, Strand, on May 1, 1857. The limits of the survey are Clerkenwell, Southwark and Lambeth, Shoreditch, Whitechapel, Limehouse and Wapping, and Holborn, St. Giles, Piccadilly Hall, Berkshire (Bridgewater) House, St. James's, and Tothill-fields; an inhabited area of between twelve and thirteen square miles.

Enville Hall.

ENVILLE HALL, near Stourbridge, the seat in Staffordshire of the Countess of Stamford and Warrington, was almost

entirely destroyed in the morning of Friday, November 25, but most of the contents of the strong-room and the ground-floor apartments, with some pictures by Titian, Murillo, Rubens, and Romney, were removed in safety. At Enville Hall, of which the older portion was built in the middle of the XVIIIth century, were preserved some relics of Lady Jane Grey. John Grey, of Enville Hall, ancestor of the Earls of Stamford and Warrington, was a lineal descendant of Lord John Grey, of Pirgo, co. Essex, nephew of Lady Jane Grey's father, the Duke of Suffolk. The ornamental grounds at Enville were laid out by Shenstone, and contain a small chapel erected to his memory. The south aisle of the parish church, which Sir G. G. Scott restored in 1872-5, contains some monuments of the Greys, and is known by their name.

School of Art Wood-Carving.

AN exhibition of students' work was held in the Wood-carving School-rooms, Exhibition-road, South Kensington, this week. The work shown included studies under the direction of Mr. H. H. Grimwood and Mr. George Jack, and specimens of the course of studies given to students preparing for the Certificate Examination of the school. Instruction in design in practical relation to wood-carving is now given by Mr. Jack, whose excellent influence is already making itself felt in the work that is shown. We recently noticed Mr. Jack's book on this subject, and pointed out how enlightened were his views and what delightful results they achieved in practice. There is probably no other exponent of the art of wood-carving at the present day than Mr. Jack. Last week we were able to give illustrations of some work done by students of the Royal College of Art under his tuition; students, of course, not entirely devoted to wood-carving, as in the case of students at the School of Art Wood-carving. Photographs were on view at the exhibition showing some nice work, including a pulpit carved by Miss E. R. Plowden. Working drawings were also shown of designs in course of execution. Not the least interesting rooms were those in which the students were hard at work carving.

The Goupil Gallery.

THE exhibition at the Goupil Gallery of Paintings and Drawings by Mr. G. Clausen is somewhat disappointing. There is the fine picture "Willow Trees at Sunset," which has already been seen at the Academy; most of the others are rather slight studies for pictures. Among these "October Moonlight" and "At the Back of the Farm" are very interesting suggestions in composition and lighting; "Early Spring" is another admirable study. "Mowing the Orchard," a larger work, is spoiled by the careless or indifferent painting of the figure in the foreground. The study of an old man, under the title "Old Joe," is admirable for breadth of style and effective colour. Mr. Clausen seems also to be taking up flower-painting rather in the style of Fantin-Latour; at least, his works remind one of that artist. The best of them is "Carnations by a Window," a very complete and satisfying painting of its class.

## THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of the Architectural Association was held on Friday last week at the new premises, 18, Tufton-street, Westminster, the President, Mr. Guy Dawber, in the chair.

Mr. H. Tanner, jun., Hon. Secretary, read the minutes of the last meeting, which were confirmed, and the following gentlemen were then elected members:—Mr. F. G. Booker, London; Mr. H. C. Tryon, Epsom; R. A. F. Guimaraens, Ealing; A. St. H. Brock, North Chean; F. W. Langman, London; F. V. Longstaff, Wimbledon; and W. B. Medlicott, London.

*The Building Fund.*

The President announced the following further donations to the Building Fund, *i.e.*, Messrs. John Murray, 10*l.*; H. L. Florence, 50*l.*; T. Elsley, 21*l.*; A. N. Prentice, 10*l.* 10s.; C. Hodgson Fowler, 5*l.* 5s.; Theo Moore, 5*l.* 5s.; H. S. Moblett, 5*l.* 5s.; P. E. Pilditch, 5*l.* 5s.; W. Woodward, 5*l.* 5s.; Sir A. Blomfield & Sons. 3*l.* 3s.; W. H. Scrymgour, 3*l.* 3s.; G. Watson, 3*l.* 3s.; A. C. Galbraith, 2*l.* 2s.; P. W. Lovell, 2*l.* 2s.; W. L. Lucas, 2*l.* 2s.; A. Bolton, 1*l.* 11s. 6d.; F. H. Crawley-Boevey, 1*l.* 1s.; J. S. Gibson, 1*l.* 1s.; C. R. G. Harding, 1*l.* 1s.; and T. S. Inglis, 1*l.* 1s.

He also announced that the following members had kindly promised to double their annual subscriptions until the building debt was closed:—Messrs. S. Chatfeild Clarke, W. E. Davis, E. Guy Dawber, Henry T. Hare, Arnold Mitchell, E. H. Sim, B. N. Southall, A. H. Ryan Tenison, M. E. Webb, Louis Ambler, A. Bolton, W. G. R. Bousfield, C. H. Brodie, F. Dare Clapham, A. O. Collard, G. Hubbard, J. K. Hunter, H. P. G. Maule, L. Simmons, and A. D. Smith.

*The Late Mr. J. Norton.*

The President said that since their last meeting they had lost an old member in Mr. John Norton. Mr. Norton had been a member of the Association for a great number of years, and in 1858 he was their President. He had been a good friend to the Association ever since. The Association was represented at the funeral by the Secretary, Mr. Driver, and he had now to propose that a vote of condolence be passed to the relatives of Mr. Norton.

The vote was carried in silence.

Mr. Tanner stated that, by the permission of Mr. F. T. Verity, a visit to the new theatre, Charlotte-street, Tottenham Court-road, would take place on December 3, the members to meet at the building at 2 p.m.

Mr. L. Ambler, Hon. Secretary, proposed a vote of thanks to Mr. E. Guy Dawber for the gift of an arm-chair to the reading-room, and this was agreed to.

Mr. J. T. Micklethwaite then delivered a lecture on

*The Church of Westminster Abbey.*

Mr. Micklethwaite said the subject he had chosen had been vaguely announced as that of Westminster Abbey, but what he wanted to talk about was the church of Westminster Abbey only, and how it came to take the form it was now. One of the rarest things in England was an old church which had been built straight out of the ground, uninfluenced by what was there before. Amongst the parish churches he did not think there were more than half-a-dozen which they could say were built on new sites and not influenced by what was there before. Amongst monastic churches perhaps there were some, but even there, if they looked closely into the case, they found nearly all of them influenced by earlier buildings which had sometimes been only temporary. Westminster Abbey was perhaps one of the most uniform churches of its kind to be found anywhere, for they found the same design running through it from beginning to end. and he had often seen it quoted as a complete example of a XIIIth century church, although it was admitted that the later parts were not XIIIth century. The same design, however, was carried through. He wanted to show them that the design as they had it now was really influenced by what had been before. He wanted to show how one step led to another until it grew from a church totally different to what it was now. The story of Westminster Abbey began in a fog—they knew nothing about it but what was legendary. They all knew that St. Peter came down on the wrong side of the river to consecrate it, and had to be paddled over, but why it was he missed his way they did not know. However, when they came to genuine history they had nothing very much before the refoundation by Edward the Confessor, except the fact that there was an older Westminster Abbey in existence. Edward the Confessor undertook to make what, for his time, was an unusually large foundation in its place. They had an almost contemporary description of what Edward did, and could tell pretty well what the design must have been; but that was to some extent influenced by the Saxon work there before. They were told it was built to the east of the old church, which was afterwards joined on to it with the intervening vestibule, and it was his intention, speaking as he was to architectural students, to work the thing out by sections, and not on the plan. Mr. Micklethwaite proceeded to illustrate his remarks by means of drawings, arranged one on top of another. Starting with a blank sheet—which he described as the fog he had previously referred to—he showed how first one part and then another part of the Abbey was built and re-built, and altered until it reached its present state. In the beginning they knew that there was a church, probably 200 or 300 years old, before the time of Edward the Confessor. They knew where it stood, and could guess more or less what it was like. Edward the Confessor started to build his church in what was a new fashion. People commonly spoke of a style called the Anglo-Saxon, and a style called the Norman. It used to be said that when William came he brought over the Norman style in his pocket, but the fact was that the so-called Norman style grew out of the so-called Anglo-Saxon. The church at Westminster was spoken of by Englishmen at the time it was done as being a new style, and they had in the Latin "Life of Edward the Confessor" a description of it written by a man who had great admiration for the church, but did not know how to describe it. The writer told them that Edward had built a church with a tower and transept, and it was round at the end, and that the choir was in the middle, and that it was consecrated a few days before Edward died. The use of the future participle in the description proved that the chapels were not finished until several years after the church was consecrated. The extent of the King's building westwards was not very clear, for all they had remaining were a few bases now under the floor of the Sanctuary. The style was quite Norman, and the same moulding occurred at Peterborough and Blyth, and other churches which they knew were early Norman. Proceeding to show a section of the church as Edward left it, Mr. Micklethwaite said it was very like what was found at Peterborough and Blyth. St. Albans was a little different, as it was built in brick and finished in plaster, whereas the church at Westminster was stone. They had also a few fragments apart from the bases he had mentioned which proved that the church was more or less like the drawing they saw before them. There was a uniformity about the churches of that time both in England and Normandy, because they were practically the same at the time, for quite apart from the Conquest they were going on *pari passu* on both sides of the Channel. When the building was finished they joined it up by the vestibule he had mentioned, and they had the tall choir and the little old Saxon church forming the nave. They must remember that in the old days in the monastic and secular collegiate church the nave and choir were not as the nave and chancel of the modern parish church. They were practically separate buildings as far as use was concerned. The church was not considered complete as Edward left it, but he left his foundation well endowed. After his death they went on building, but they built slowly, and it was the end of the XIIth century before the nave was finished. They knew that the church was completed, because they had a written description of it in the XIIIth century before the next step was taken. One addition was made before anything was pulled down, which was the erection of a lady chapel at the east end in 1225. It was commonly said this was done by Henry III., but that was not so. Henry III. was a boy at the time, and there was evidence that the chapel was built by subscription in the usual way. They had the foundations of a good deal of this remaining under Henry VIII.'s chapel. Twenty years later Henry III. became a royal benefactor, and undertook to rebuild the choir of the church to give greater glory to the shrine of the Confessor, and this shrine also he made at great cost. He began by pulling down

the Confessor's choir up to and including the crossing, and building what we now see in its place. Henry III. made two stories of his building to the height of the three stories of the original church. About 1260 it appeared that the first work was nearly finished and Henry undertook the completion of the whole choir. Some of the books told them that Edward I. did this, but there was no evidence of it. On the other hand, there was evidence in the coats of arms in the aisles that it was done in Henry III.'s time. There were the coats of arms of different persons which would not have appeared in Edward I.'s time, which proved that Henry built the choir proper. The design was the same, but with considerable variations of detail, which he could only show them if they were on the spot. They could trace distinctly where one work ended and another began. They knew it was finished in 1269, because on the Feast of the Translation of St. Edward, which was October 13, the monks entered the new choir. That was the state of things on the death of Henry III. in 1272. It left the church in the condition of having a lofty choir and a comparatively low nave, with a thick wall dividing the two, and some sort of lean-to roof at the junction. Fifty years or more afterwards they began to alter the west end, and somewhat later they came in for a large sum of money and rebuilt practically the whole of the domestic part of the abbey, and also set to work to rebuild the nave. A large part of the work was done during the XIVth century, but with the French wars and other things money was lacking, and the work then went on slowly to the end of the next century, when they filled up the gap between the XIVth century nave and the work of Henry III., and that work was here now to tell its tale. It was quite at the end of the XVth century that they closed the gap and put in a new west window. What he wished to impress on them was how much the form had been arrived at by what was there before. How first there was the Saxon Church and the Norman completion of it; then the XIIIth century work put in between the lady chapel and the still existing Norman nave; and then the Norman nave replaced by what was there now. That brought the church practically to its second completion, as he might call it. There was one other alteration. The XIIIth century lady chapel was pulled down and replaced by the splendid Henry VIII.'s chapel. Thus they saw the church grow up from a little church, bit by bit, until they got the present building.

*Excavations in Ancient Westminster.*

In the absence of the author through illness, Mr. L. Ambler then read the following paper for Mr. E. P. Warren, entitled:—"The Abbey Mill Stream and Bridge at the corner of Tufton-street and Great College-street, Westminster":—

Great College-street forms the southern boundary to the garden of Westminster Abbey, from which the street is separated by the well-known mediæval stone wall that runs along its northern side.

In many old maps this is called the Dead Wall, and separated the garden from the path and water-course, the situation of which are accurately represented by the street of to-day. In a map dated 1690, at the British Museum, this Dead Wall is shown as forming the southern enclosure of the Earl of Lindsey's garden, the eastern portion of which seems to have formed part of the site of the Abingdon-street houses.

Many confident statements are to be met with that the water-course in question was a tidal creek, practicable for boats and barges as far as the ancient Abbey Gateway, represented by the archway at present giving access to the south-eastern corner of Dean's-yard, anciently called "The Elms." A study of XVIth and XVIIth century maps and plans, however, makes it clear that this water-course was a mill stream of no great width, and serving a mill placed on the river bank at the southern end of the present Victoria Tower Garden.

This mill is clearly shown in several plans and "Birdseye" views, notably in the plan of Pieter Vanden Keere, 1593, in the print-room of the British Museum. In this plan a double structure is shown, labelled the Queen's Slaughter House and Mill.

Norden's map, in the "Speculum Britanniae, the first parte," published in 1593, also clearly shows the Mill and Queen's Slaughter House.

The Slaughter House existed well into the XVIIIth century, and is shown as the King's Slaughter House, in the same position, in a plan of intended improvements to Westminster Bridge, dated 1739, at the British Museum.

In view of its position on a tidal river, with so great a rise and fall of tide as the Thames, the Mill, in all probability, must have been worked between tides, and very likely by means of automatic flood gates, which admitted water as the tide rose, and held it back as the tide fell. There are, I believe, many mills of this sort existing on Southampton Water and elsewhere, and I have lately seen one near Chichester. If such was the nature of the mill, boats or barges could only have passed from the Thames to the mill stream at high tide by some side creek or lock, which I have been unable to detect on any of the maps or plans I have seen; and in the recent demolitions of buildings in Great College-street, and the subsequent excavations, nothing, so far as I am aware, has been discovered, either in the nature of quays or wharves, or in that of fragments of boats or apparatus of any sort, to warrant the supposition that the stream was navigable.

It is possible that the other branch of the Tyburne, which ran along the northern side of Thorney Island, and fell into the Thames further down, was navigable to some point in or near the enciente of the Abbey precincts, but of this I have no evidence.

In Richard Bloom's "Mapp of the Parish of St. Margaret's, Westminster, taken from the last Survey with Corrections" (1720), the position of the eastward commencement of uncovered waterway in Great College-street coincides with the bridge recently uncovered at the junction of that street with Tufton-street, and of which I am able to show a photographic view, and a measured drawing made last spring.

Bloom's map shows Tufton-street as the Bowling-alley, a name under which it figures in several contemporary and earlier maps, and indicates several small bridges crossing the course of the stream in what is now Great College-street and connecting the path that ran along the bank under the old wall, known as the Dead Wall. It further shows one wide bridge for general traffic on mill bank.

The bridge, as shown in my illustrations, consists at present of a round brick arch or vault, placed between two stone abutments or flanking walls of obviously earlier date. The brickwork appears to be, at earliest, of XVIIth century character, and the arch uncovered recently, seems to me to be the end of a culvert rather than a bridge, and formed between the stone abutments of a demolished bridge, which was probably of timber, merely to enable the street to be carried solidly up to the entrance of Dean's-yard.

It is noticeable that the exposed end of this brick vault shows that there is no invert arch. The vault indeed springs from the clay of the bed, without anything approaching to foundations. As I saw it in the spring, the right hand or northern side of the vault rested upon a thin slab of wood, which, on inspection, proved to be not even oak or elm, but pine.

I have had no possible means of ascertaining the length of this brick vault or culvert, and its extent would throw considerable light upon its purpose, for, if extending back, *i.e.*, westwards as far as Great Smith-street, it would lead to the supposition that, after the disuse of the mill and mill stream, the latter was vaulted over to gain ground whereon to erect buildings or form gardens at the back or to the southward of Dean's-yard.

A few years ago the northern side of Little Smith-street, at present occupied by the Church House, was formed by a row of small houses, whose back-yards abutted on the mews and back-yards of Dean's-yard, under these back-yards approximately the stream must have passed. But Norden's map shows a twin stream, the southern branch of which would, I think, about coincide with Little Smith-street. These streams seem to converge at the bridge.

It will be noticed in Norden's map, of which my illustration shows a portion, that there is a group of buildings precisely at the point where the recent excavations have discovered so many indications of XVIIth century usage.

These are the only buildings which, in 1593, seem to have existed on the south bank between the Abbey gate and the river.

The stone abutments or flanking walls of the bridge are in fairly dressed masonry of Kentish rag, and are, I should say, not later than the early part of the XVth century.

Eastward of the bridge and marking the southern bank of the stream, is a row of small timber piles or camp shedding, probably placed to form a stable site on the bank for building purposes.

Upon this site, extending between Tufton-street (the old Bowling-alley) and Barton-street, a much more recent thoroughfare apparently, there stood until last year two blocks of houses separated by a narrow passage called Black Dog-alley, and all, I think, of the XVIIIth century; though the brick-vaulted cellars beneath those in the eastern block next Barton-street, built of smallish bricks, had the appearance of XVIIth century work.

A very large number of objects, pottery, spoons, knives, etc., mostly of the XVIIth century, were found in the recent excavations beneath these houses, together with a portion of a Purbeck marble shaft, which I believe to be the upper part of the shaft from the north-eastern angle of the Confessor's shrine; it exactly fits that position. I shall now be able to show other objects of a similar character, but before doing so wish to offer a few remarks upon the course of the stream in the neighbourhood of Thorney Island, and must profess my indebtedness for much information to Mr. J. G. Waller, Fellow of the Society of Antiquaries, whose paper and plan contained in the transactions of the London and Middlesex Archæological Society in 1890 is of extreme interest and value.

Mr. Waller derives its name of Tyburne from the Saxon Tye or Teo Bourne—a double brook—and accounts for this name by the duplication or bifurcation which forms the delta on which the city and abbey of Westminster stand, and which, as he says, it must have done much to form. He points out that in its southward course, from its rise in the Conduit fields below the hill of Hampstead, to the Thames, it gives name to Brook-street, to Conduit-street, and to Pump House-ground, at the junction of the latter with Bond-street. Hence it passed by the rear of the gardens of Berkeley House and the end of Clarges-street to the Green Park, which it crossed to the front of Buckingham Palace, where, in Faithorne's map of 1685, it was covered in from view. Passing in front of the Palace its course was down James-street, Chapel-street, Orchard-street, between the present Church House and the south side of Dean's yard to the bridge at the corner of Tufton-street.

Mr. Waller describes the junction of the other branch, the bifurcation, as occuring in front of Buckingham Palace, whence, he says, it made a bold sweep westwards forming the ancient boundary of Westminster, and, under the name of the King's Scholar's Pond Sewer, passed into the Thames, running close to Victoria station—there was in the early part of the XIXth century a brewery here—and by Vauxhall Bridge-road and Tachbrook-street, out to the river. But there is still the eastern branch which confined the island of Thorney to account for, and this is more difficult. In Norden's map a branch is shown running eastward along St. James' Park until close to Spring-gardens, somewhere about the present Admiralty buildings, it seems to be covered in, or at any rate disappears. The whole lie of the ground, however, and the lines of the houses in old maps, seem to indicate that it passed through Old Scotland-yard or thereabouts, and made for the Old Scotland Dock, shown clearly in the plan of the Palace of Westminster, published by the Society of Antiquaries in 1747, from a Survey of 1680. There seems, however, to have been an offshoot of this branch running southward across the present Parade Ground of the Horse Guards. I think it must have passed along a portion of the eastern side of St. James' Park, as excavations along the western side of Delahay-street some years ago discovered a number of willow trunks, etc., and down Princes'-street, which in a map of 1685, as well as in others, is called "Long Ditch," though this, of course, may have been an artificial ditch.

The water has long since been diverted from the natural course of the stream into the pond in St. James's Park, and into various sewers. There is no water in the old course in Great College-street, and my examination of such portions of the course as were recently exposed suggested that the diversion of the water, and the silting up of the course, had rendered the stream inoperative as a mill-race before the brick culvery or bridge was built.

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I have now to draw attention to the objects found in the excavations on a spot bounded by Tufton-street—or the old Bowling-alley—on the west, the Mill Stream or Great College-street on the north, and Barton-street on the east, and extending to some 80 or 90 ft. southward from Great College-street.

Most of the articles were found within 20 or 30 ft. of the old stream; many in the course itself. These mostly, to such an audience as this, speak for themselves.

They consist chiefly of spoons, knives, and pottery. Of the spoons, No. 1, a small slip-ended pewter spoon, is, I think, the earliest, probably early XVIth century, and much like one in the Ellis Collection at South Kensington, having the date 1523 assigned in it.

No. 2, marked "S. G." on the handle, and No. 3, with "H" on the back, are of about the middle of the XVIIth century.

No. 4, a pewter spoon with a touch composed of two cross spoons, is of the first half of the XVIIth century.

No. 5, a brass spoon, 1660.

No. 6, a brass spoon with a heart on the touch and a *pied de biche* handle, probably 1680-90.

No. 7, a spoon marked "T. S." and with a *pied de biche* handle, of about the same date, as also No. 8, a pewter spoon with a lozenge-shaped touch.

No. 9, the sifting or straining spoon of brass, from the shape of its handle must be, I think, of the XVIIth century; probably late.

The knives are, I think, all of the XVIIth century, with the possible exception of No. 10, a knife with a small, blue-stained, short wooden handle, inserted in an iron ferrule, which may be of the late XVIth century.

The small glass bottles, Nos. 13 and 14 are probably scent or essence bottles.

I am indebted to Mr. W. W. Watts, F.S.A., and Mr. Mitchell, of South Kensington Museum, for kind assistance as to dates and descriptions of these articles.

The most interesting find has been No. 19, the "Gray beard" jug with its contents. When found and purchased by me it was stoppered down with a cork, and upon opening it and washing out the contents, was found then to be the objects here exhibited, viz.:—

A small piece of cloth or serge, formerly red, cut carefully, and neatly into a heart shape, and stuck full of brass roundheaded pins, each pin bent. A small quantity of hair, ostensibly human, and some small finger nail parings. I think there can be little doubt as to the nature of this deposit inside a corked jug, found in the clay of the mill stream bank. It is a malevolent charm, the intended victim of which was a woman, and it is perhaps permissible to surmise that the depositor and evilwisher was of the same sex. Perhaps a maidservant who had a grudge against her mistress, and who could easily obtain the clippings and prunings of her toilet.

The jug and its contents were probably buried, with the accompanying rite of a fearful incantation. The Lord's Prayer may even have been said backwards, and a peculiarly malevolent phase of the moon may have been awaited. If it is fair to form these somewhat uncharitable and ungallant surmises, the opportunity is also presented of adjusting the balance of charity, and of gallantry by expressing the sincere hope that the charm was ineffectual, that the fair intended victim escaped all aches and pains, and that the only pricks bestowed were upon the repentant conscience of the depositor.

Having but little knowledge of the Black Art, and being unable to count a single sorcerer amongst my acquaintances, I appeal to any of my audience who are more erudite or more highly favoured to assist me with information as to the science and practice of charms of this order, or to cite similar or correlative instances of which they may have knowledge.

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At the conclusion of the paper Mr. Ambler read from *Notes and Queries* an interesting article on folklore, bearing principally on the discovery of the box referred to by Mr. Warren containing a heart pierced with pins.

The Dean of Westminster said the associations of Westminster were always full of interest. He did not know that it was wise that such an immense amount of important information of a dangerous character should have been conveyed to a general meeting, but happily in these humane days they only used pin pricks in a controversial way. He really rose to thank Mr. Warren and those two of his pupils who were good enough to bring back to the shrine of Edward the portion which had been carried away at the time of the Reformation, and which had found a lodgment in the mud somewhere near the little culvert of which they had seen a view. A portion of the shrine of St. Edward was something which was beyond all price, and it was highly honourable—scarcely that, for it would have been too terribly dishonourable if any person had kept this portion of the shrine back. At the same time they did most earnestly and sincerely thank those who secured it for them at a time when it might have slipped away. It might have slipped away into the American market, where it certainly could have been sold for a large sum of money. They were glad to get a fragment of that kind back again, and they owed a debt of gratitude to those who had restored it, and it was a desire to publicly acknowledge this which brought him there that evening. Mr. Micklethwaite's wonderful scheme he had had the privilege of seeing before, and it was always worth spending an hour just to see his "onion peeled," as he called it, again.

Mr. W. D. Caröe, in seconding the vote of thanks, said it was impossible to speak for the first time in that room without congratulating the Architectural Association on the acquisition of those admirable premises beneath the shadow of Westminster Abbey. They had been told in these latter days that architecture and archæology were to be divorced, but it was satisfactory to hear amongst the earliest papers in their new abode such archæological and, in part, mystical papers. He was afraid it was a good many years ago when he had the privilege and fortune of having the run of Westminster Abbey, and he believed there were none of its secret places or of its eloquent stones with which he had not at one time a pretty familiar nodding acquaintance. He referred to that because it taught him that if there was one person who knew far more about Westminster Abbey than he did that was Mr. Micklethwaite. He trusted that one of the influences of their new home would be to encourage the younger members more than was the case amid the solemnity of the walls of Conduit-street to take part in the discussions. He thought he could assure Mr. Warren that the old writers were correct when they stated that the millstream was navigable, and he had taken from its bed from beneath the foundations of new buildings at Westminster a very unmistakable article, viz., the end of a barge pole. A still more significant article found was a boat-hook taken out at nearly the same position. It was possible that these might have been thrown in, but it was fair to assume that they were lost in use at the bottom of the river. Mr. Warren referred to the fact that there was a bowling green in Tufnell-street, and he (the speaker) produced two bowls which had been dug up. All these articles were found beneath the foundations of Great College-street-buildings, which were removed. He also found an exact counterpart of one of the Greybeard jugs, which was incomplete, and another which was considerably larger, and had a German inscription several times repeated. There was another article found in a deep foundation, but which no doubt came out of the ash pit. It was a coronation cup of King William IV., and as it was found a day before the coronation of King Edward VII. it was a curious coincidence. One effect of Mr. Micklethwaite's remarks ought to be to convince them that Westminster Abbey was one of the most interesting and best preserved buildings in Christendom. They could wander all over the Continent, and wherever they went they could not find a single building with so many curious points of interest. The extraordinary regularity with which the apse was set out, almost to within an eighth of an inch, and the introduction into it of the XIIIth century Italian work were all curious things one did not often see in other churches—certainly not in this country. Mr. Micklethwaite had referred to the question of the tower of the Abbey, and doubted whether it was ever built. He hoped in the course of another month or so to be able to make public a statement on the ancient Norman central tower at Canterbury, called the Angel steeple. The chief point of interest he would be able to establish was that the new arches were put in underneath the Norman tower which was entirely preserved. Whether the same thing took place at Westminster he could not say. It certainly was a very curious circumstance showing the immense skill in pure engineering works that the builders of that time possessed. Of course, they knew many examples where they succeeded in putting arcades under Norman walls, but he was not aware of any other example where the entire tower was kept up and where the Norman piers were cased round and the Norman arches taken out and new arches put in underneath it.

A Visitor remarked that he had watched with sorrow new buildings going up in Westminster which to his mind were appalling eye-sores and a disgrace to the City not only on account of their own intrinsic hideousness, but also on account of the absolute incongruity with their ancient and beautiful surroundings—surroundings which were dear to those of them who were citizens of Westminster. He thought that that Association might possibly approach the authorities to prevent similar atrocities being perpetrated in the future. He would urge that the Westminster City Council and the London County Council should be moved to appoint a permanent committee of architects which should have power to prevent the erection of any buildings which were inartistic and architecturally bad and more especially incongruous with the existing surroundings. There would be no difficulty in finding members for such a committee with the Association in their midst.

Mr. Francis Hooper said he would like to ask a question with regard to the earliest buildings on the site of Westminster Abbey. Mr. Micklethwaite had dealt with the outlines and situation of the Saxon church, but it was generally believed that this church occupied the site of a Roman temple dedicated to Apollo. Was that a fact, and were there any indications of it at all—any remains as evidence of the fact?

The Chairman, in putting the vote of thanks to the meeting, said the dissertation which Mr. Micklethwaite had given them had been one of the most interesting he had ever heard. There was only one fault about it—it was too short, and perhaps Mr. Micklethwaite would give some more particulars when he replied. He quite agreed with Mr. Caröe that it was a good thing for them now and then to have archæological papers. As architects he felt it was a great mistake entirely to confine themselves to the practical everyday things. They should all take up archæology in some way or other, as it had a direct bearing on their work. Especially now that they were in the precincts of Westminster Abbey, it would be admirable if, as Mr. Caröe suggested, students took the opportunity of more frequently visiting the Abbey and studying what was one of the most unique buildings in the world. Mr. Warren's paper was entirely archæological, and it was difficult to criticise it. The only thing he would like to suggest was that where there was so much pulling down, excavating, and rebuilding all over London, and certainly in some of the most historical sites outside the City, there should be some society formed so that all these valuable finds relating to the history and daily life of the people of the past should be collected and stored in some building. To a certain extent they had that for the City in the Guildhall, but he knew a great many things found went into private hands. In the case of such finds as Mr. Caröe had shown of pottery and spoons and other interesting articles they should be put in some museum where they could be always seen.

Mr. Micklethwaite, in reply, said as to the story of the Temple of Augustus or Apollo, as it was sometimes called, he was afraid it was nothing but a legend. Some years ago when excavations were going on in the cloisters for the purpose of fixing the engine for blowing the organ he did see fragments of what was undoubtedly Roman mortar. There had been the materials of a Roman building somewhere there, but there was no Roman wall or anything of that sort. There were fragments of old stones with Roman mortar stuck on. There was also the post which used to lie on its back in St. Margaret's Churchyard, and which, he believed, was in the vestibule of the Chapter House now. It had a couple of letters on it which had every appearance of being Roman, and it was thought to be a Roman milestone. Probably the Roman passage of the river was at Westminster, more or less on the site of Horseferry. That was speculation, but a good many people held that view. With regard to a Temple of Augustus being on the church site, he could tell them a tale. He was old enough to remember a clerk of the works of Westminster Abbey whose name was not Wright, and this clerk of the works came up to Mr. Scott's office where he (the speaker) was then, and told them he had made a great discovery—he had discovered one of the stones

of the Temple of Augustus Cæsar. Some of them went down, and there he had got a panel with the initials "A.C.," which he concluded meant Augustus Cæsar. Unfortunately one of them recognised it as one of the missing posts of the tomb of Anne of Cleeves. That was the best evidence he could give them of the real existence of a Temple to Augustus Cæsar. Had he spoken longer one of the things he would have insisted upon a little further was that a very strong ruling matter in the development of the church was its continued use. The church never went out of use. They had no tin tabernacle for use when the church was being restored; they wanted a church to use, and the rebuilding had to be done piece by piece and in such a fashion that some considerable part of the church was always fit for use. If they went into the details of the rebuilding, especially Henry III.'s work, they could see how the earliest parts were built. If they looked closely into the building they could trace bit by bit how the work was done without disturbing the monks. There were little details in the order of the work which could only be proved by looking at the building itself. It could be seen how ideas changed as they went along, although the general effect was the same. Mr. Caröe spoke of the under-building of piers in the crossing, but that certainly had not taken place there. It was not, however, an uncommon thing, and they found it done at Ripon and York. At York they found a perpendicular tower and arches carrying it. If they went into the covered part of the roof high up above they found the Norman tower still visible.

*Special Meeting.*

The Chairman announced that there would be a special general meeting held at 7.15 on Friday, December 9, to pass the following by-law:—"The Association shall not make any dividend, gift, division, or bonus in money between any of its members." The reason for that was they were claiming exemption from the rates which was a very heavy item, and it was necessary that they should get this small change in the by-laws.

The meeting then terminated.

## THE SURVEYORS' INSTITUTION.

An ordinary general meeting of the Surveyors' Institution was held on Monday at No. 12, Great George-street, Westminster, S.W., Mr. H. T. Steward, President, in the chair.

Mr. J. C. Rogers, Secretary, read a list of donations to the Library and the Library Fund, and a vote of thanks was accorded to the donors on the motion of the Chairman.

*The Building Surveyor.*

Mr. C. John Mann then read a paper entitled: "The Building Surveyor, His Training and Practice." After some preliminary remarks, he said that the term "quantity surveyor" was of comparatively recent origin. The members of the profession were, forty or fifty years ago, called surveyors or building surveyors. The demand for their services came in with the system of combining all trades in a contract with one builder, which at this time had become general. That an architect should speak of a surveyor as his "quantity surveyor" or his "measuring surveyor," as the case might be, was natural enough and doubtless quite right, because that was generally the position a surveyor took in regard to the architect, his work, and his employer. The fact that other branches of the profession came under the general designation "surveyor," might, in the minds of some, be a good reason for the desire for a prefix or some distinguishing term to mark those who specially practice quantities. The nature of the business of the surveyor was so seldom understood by employers, particularly private clients, that this was, he thought, a reason why the name by which they were called should be very much left to the architects through whom they got the introduction to most of their work. Those who get a sufficient quantity of work of a remunerative character fully to occupy their time, probably saw no objection to a title which appeared to restrict them to one description of work, but this state of things did not apply to the greater number, particularly to those commencing practice, and he thought many would prefer a less restrictive distinguishing name if one could be found. As business increased and the quantity practice became definite, the designation "quantity surveyor" might be appropriate and sufficient, but there were important matters connected with buildings, referred to surveyors for settlement, which embraced a much larger field than was covered by this designation. It was only a fine line that separates the profession of the architect from that of the surveyor, though most of them would agree that the more distinct the practice is, the better. In the event of any dispute or misunderstanding with the employer, the architect and the surveyor could take up their proper duties and positions with much greater freedom and force than was possible where one had combined both duties. He had more than once had serious disputes laid before him arising from the latter course, and involving law suits as well as arbitration, in cases where the employer had not been fully informed of the circumstances. It was interesting to note that the Birmingham Architectural Association had recently protested against the increasing amount of architectural work put into the hands of their city "surveyor," and the Wolverhampton Architectural Association had protested against the "unfair custom of entrusting architectural works to be carried out by the borough engineer's department." The advertising columns of the professional papers also showed that there was a considerable mixing up of the various branches of surveyor's work, and an attempt had been made to form a separate institution or association for quantity surveyors only. Personally, he did not think a sufficient number of qualified surveyors of good standing would be found willing to tie themselves down to quantities only, particularly having regard to the present tendency to lower remuneration for quantity work. Their practice in taking out quantities and in other work properly belonging to their profession soon proved what kind of surveyors they were, and he did not think it improved their position or independence to call themselves "quantity" surveyors, as if quantities formed the only legitimate part of their practice.

*Training.*

The surveyor should commence his career by serving his time in a surveyor's office, and between sixteen and seventeen was the best age. Except under special circumstances a pupil should be bound for four years. In some respects it was an advantage for him to spend a year in the shops of a first-class builder or on some building during its erection, but this must not disturb his training as pupil with the surveyor. Speaking generally, he did not think that in these days there was time for this, and the advantages to be gained were not unmixed with some disadvantages. By carefully regarding work in progress and taking every opportunity of following out details in the office and reading up special subjects, the pupil should become conversant with the details of construction and of the work connected with the various building trades. The surveyor's pupil could not too early learn to take responsibility, beginning of course with small things. The nature of the work he would first be called upon to do was simple, but until he could do it with precision and feel his responsiblity in regard to it, he was worse than useless. The pupil need never be asked or expected to take the responsibility of any work that he had not mastered, but once trusted he must never fail. He must also learn to work quickly without feeling that the pressing rate at which the work was done is the slightest excuse for a mistake. Squaring dimensions, casting abstracts, fair copying, tracing, were all very simple, but the work must not be allowed to be taken in hand, for any use that was to be made of it, till the pupil had acquired precision and quickness together with a sense of responsibility. Distinct writing and figures, without flourishes, were indispensable. Nothing was more vexatious than to have to stop in the middle of a long cast and refer to other papers to determine whether what, at the first glance, you took for a 3 but subsequently thought might be a 5, was possibly a 6. It was the practice of some to place their sons for a short time, say twelve months or less, in different offices, as for instance, in the office of an estate agent, a builder, an architect, and a builder surveyor. Though they were often important well-known offices, he regarded this as a great mistake, for the youth could only occupy a very subordinate position in any of them, and under the most favourable circumstances he became a sort of Jack-of-all-trades and master of none, with the dangerous reputation of having been in the office of this and that important firm and having a very indistinct knowledge of what it was he did not know. The pupil, having established his reputation for reliability in small things, and added to his stock of knowledge the various terms used by surveyors, their abbreviations, and to a considerable extent their meaning, passes on to abstracting and billing. Here it was, he thought, that many young men neglected to take full advantage of their opportunities, particularly in those cases where the system of taking off was to complete each item of the work in every trade with its consequent deductions, rather than to take off in separate trades. The careful and interested abstractor would look at each dimension and its description as he went on, and thereby learn the details of construction, with the relative sizes of the various parts making up the materials and labour connected with the whole of each item of the work. If pressure of time would not permit of this being done while abstracting, it could be done when the bills of quantities were finished, and perhaps sometimes before the drawings and specification go out of the office. This was not only a stepping stone to taking off, but also enabled the pupil to understand how to measure up works in progress. Every opportunity of acquiring a knowledge of pricing, which was, in perfection, almost an art in itself, should be taken advantage of. These would occur in moneying out, and making up estimates and builders' accounts. The pupil should, as occasion offered, be questioned by the principal with the view of testing his rate of progress and acquirements. Method was a most important factor in the profession of a building surveyor. Without very rigid order it would be impossible to supply accurate bills of quantities or bills of measurements. Another great benefit arising therefrom was fully realised when measuring up the variations on a contract and preparing bills of extras and omissions. In measuring variations the extras were generally fairly visible, and in any case attention was sure to be directed to them by the builder or his foreman; but the unseen omissions could only be traced from the dimensions taken for the original quantities, and things not taken in their proper order were liable to be overlooked. The pupil must realise that, with the most elaborate specification and detail drawings, there might be a few discrepancies, which in taking off quantities were sure to be discovered, as well as matters which it might be difficult or impossible to delineate or describe so clearly as not to raise a doubt about them. Moreover, the constant introduction of new inventions, materials, and methods of construction might make it necessary for the surveyor preparing the quantities to see the specialist connected with them. All these points rendered it necessary for the surveyor to keep a neat query paper on which to record them in order that he might refer them to the architect for settlement and embody them in the specification and drawings, if approved.

It was probable that the pupil's work would by this time be interspersed with some of that general work of which he should now have a fair knowledge, and which the preparation for, and the passing of, the professional examinations should fit him to undertake. He would, as one of the examiners, remind candidates for the examinations to be on their guard against a superficial knowledge of any of their subjects, such as was attained by "cramming." Even if they were perfectly capable in their typical subjects, they should take care that their knowledge was thorough on the other subjects they had taken up, covering ground of a very varied character, and full of pitfalls. Mere superficial knowledge, acquired with the object of satisfying the examiners for the moment, would not stand by one in after years. The pupil should not be diffident in asking questions, particularly with regard to terms used which he did not understand, exercising judgment as to doing so at times when they would not inconveniently interrupt the business in hand. The intelligent and industrious pupil would naturally be taken up by the seniors to assist them in their work rather than the indifferent and careless, and hence some would progress by leaps and bounds whilst others fall behind. A few were naturally slow, but these he generally found come out right in the end, and if their articles expired before they had acquired the knowledge that was expected of them, he thought it was advisable in these cases to endeavour to make such terms as would enable them to remain until they became more proficient. A young man having served his time and passed his P.A.S.I. examination in Sub-division 3 would do wisely to remain in the same office in which he was trained or go to a good firm for some little time after, but it was a matter for his own consideration whether he

would do this or become a temporary assistant, working hard, with frequent spells of semi-idleness, and gradually building up a practice for himself. This was difficult, and he must remember that although much depended upon the work he did, yet a good deal depended upon what he abstained from doing, and that while doing his best to get work, he must not be over-pushing.

*General Practice.*

The general practice of a building surveyor was full of interest, comprising business of a varied character connected with land, buildings, sanitation, light and air, and law. It was, of course, essential that in connexion with these he should familiarise himself with the London Building Act, the Public Health Acts, Model Local By-laws, and the numerous other Acts and regulations in force with regard to buildings of all kinds, and should keep himself well up in what was going on by reading the professional and daily newspapers and attending meetings and lectures on subjects of interest connected with his profession. It often happened, through delay caused by the employer in deciding on his plans, that by the time the architect handed the drawings to the surveyor to prepare the quantities, the latest date had arrived that was contemplated for the commencement of the building work. This was frequently the cause of the great pressure in the surveyor's work to which he had alluded; but surveyors must of course do their best to meet this pressure. Unlike architecture, taking out quantities did not offer allurements to the amateur, and was considered by some who did not practice it, to be an uninteresting and tedious occupation, but it was really quite the contrary. He who undertook the business must be prepared for continuous, steady work, and long hours, and must keep himself as free as possible from interruptions. The great variety of work in building and engineering that came into the office for preparation of bills of quantities, the treatment and characteristic methods, designs, and details of various architects and engineers, the occasional discovery of little inconsistencies or discrepancies in the drawings and specification, all tended to give interest to the work, and it was pleasant to know that, when the bills of quantities went out of his office, the surveyor had finished with the work till the time came for going into the variations, and settling up the builder's account. Measurements under schedules of prices, and settling up variations on contracts, took the surveyor out of doors, and formed an agreeable change in his duties.

*The Position of the Surveyor.*

It was appalling to think that thirty years ago little or no specification with regard to drains and plumber's work was considered necessary, and that cistern overflow pipes and lavatory wastes were taken into the D trap of the water-closet as being the best-known method. The advance of science and the adoption of new inventions had created the necessity for new kinds of buildings for new uses, such, for instance, as cold storage buildings, electric power stations, dust destructors, and many others. Forty years ago the position of the surveyor was a unique one. He was responsible to three persons, viz., to the employer who paid, to the builder who executed the work, and to the architect whose work, comprised in drawings and specification, he set out in such a manner as to enable the builder to correctly estimate its cost. At the period to which he alluded, the builders were more directly represented in the matter of quantities. Those invited to tender for work usually met and appointed a surveyor to prepare the quantities on their behalf. Their surveyor sat down with the surveyor appointed by the employer, and took off the quantities, agreeing the dimensions as they put them down, finally issuing the bills with their joint signatures on the endorsement, and both being paid by fees included in the bills of quantities. If the surveyor appointed by either party was well known to both, he frequently acted for both. In cases where tenders were asked for and no quantities supplied, the builders appointed a surveyor to prepare the quantities for them. Later the quantities were often supplied by the employer and sometimes accompanied by a note to the effect that the builders tendering must satisfy themselves as to their accuracy. This, of course, it was impossible for the builders to do in the time allowed for making up their tenders, and if done would have rendered the quantities issued of little use. Naturally this system never became general, and soon died out. The tendency to take away the responsibility of the surveyor was naturally accompanied by a tendency to reduce fees, and, to some extent, to lower the standard of his work. Quantities were now invariably supplied by the employer and were generally part of the contract, doing away with the necessity for the builders being represented in the preparation of the quantities. In some cases the employer now pays the surveyor direct, but more often he is paid through the builder. In any case the surveyor was always liable to have his work subjected to the most searching investigation by three persons, two of them experts, whose interests, in the ordinary nature of things, were opposed to each other. He had never known a competent surveyor shirk this investigation, although it was sometimes of a vexatious character. Most of them (however they might be regarded by others) felt to a great extent in the position of arbitrators with regard to their work, holding the scales of justice fairly, taking the measurements with exactness and rendering the descriptions with clearness and as much conciseness as possible, always remembering that they must be definite, or, if that was impossible, the risk must be clearly shown, so that the builder might know precisely what he had to estimate for.

*Quantities.*

There was, he thought, in the present day a greater tendency among some builders to raise questions on the quantities than there used to be; which was due to some extent to the quantities being (as they now nearly always are) made part of the contract. It induced some builders to compare every item and description of the work as executed, and the smallest difference in the architect's details and instructions were carefully noted. This induced an architect's zealous assistant to have a keenness for small omissions, where a little greater breadth of view on both sides, with regard to the slight differences to which he alluded, would bring about quite as satisfactory a result with less friction. It must not be understood that he was against the quantities being made part of the contract. The attitude he was always taught to assume on this question was that, having taken out the quantities accurately, it did not matter whether they were part of the contract or not. The *pros* and *cons.* of the subject had often been considered, and by the survival of the system he felt bound to agree that, looking at all the questions and points involved, he was unable to suggest anything better fitted to meet the situation.

*Responsibility of the Surveyor to the Architect.*

As to the responsibility of the surveyor in relation to the architect, to whom probably he was indebted for his employment, while dealing fairly between employer and builder, he must not forget the consideration due to the architect, who, to a great extent, was in the same position as himself as regards impartiality, but who, being constantly in communication with the employer and receiving instructions from him, might sometimes find himself in a position rendering it difficult for him to act impartially. The position which the employer or builder might choose to take up in regard to questions that had arisen during the progress of the work, or it might be in regard to some question between himself and the builder, might cause the surveyor to have to do very responsible work, of importance to the architect as well as to the employer and builder.

*Drawings and Specifications.*

Speaking generally of drawings and specifications, he could remember occasions in the past when the quantities were taken from pencil one-eighth scale drawings and a sheet or two of notes supplied by the architect, and often much discretionary power was left to the surveyor with even more finished drawings. The surveyor then prepared the tracings of the drawings and copy of the specification from which the builder carried out the works; but this practice had long been discontinued. The drawings, specification, and documents in the present day were much more detailed, elaborated, and complete than they were thirty years ago. This was at once an advantage and a disadvantage to the surveyor. Everything was shown or described, but he had many drawings and details and a voluminous specification to turn over, and where there was so much information it was rather exceptional if it did not occasionally appear contradictory. In ordinary practice a surveyor had frequently to make approximate estimates from drawings more or less complete, as cost often governed the whole business and the employer required to know the total amount of outlay necessary before committing himself to great expense. This work was of importance to the architect, and wrong judgment, causing excess, might lose him the business, or wrong judgment in under-estimating might result in disaster. Occasionally it happened that so much time was occupied in making preliminary drawings and alterations required by the employer in the plans, that the architect had not time to prepare the specification before sending the drawings to the surveyor for the preparation of quantities, and notes by the architect were found sufficient for the surveyor. In such cases the surveyor sometimes wrote the specification from his dimensions. If written by the architect it was necessary for the surveyor to go very carefully through it to thereby ensure that everything in the quantities was in the specification, and that there was nothing in the specification that was not in the quantities. The contract was thereby kept clear, rendering the settlement of accounts at completion less subject to complication than might be the case if the architect wrote the specification after the quantities were prepared.

*Tender and Contract.*

On occasions when the lowest tender that came in was more than the employer was willing to accept, the surveyor was required to assist in the necessary reductions. This was painful work, as the surveyor was sure to suggest that the very bays and oriels, and other features in which the architect delighted, could be left out without materially diminishing the accommodation. It was with reluctance that the architect was at last constrained to give up such features, rather, perhaps, than substitute brick for stone or adopt some drastic measure in face of the difficulty that the employer would not allow the accommodation to be curtailed. The architect having arranged with the surveyor what he was willing to part with to bring the estimate down to the required amount, the matter was left in the surveyor's hands to settle the reduced amount with the builder whose tender was the lowest. On the signing of the contract, and in accordance with the terms of it, the builder deposited with the architect a sealed priced copy of the bill of quantities, corresponding in all respects with that on which he made his tender, which was to form a schedule of prices for variations on the contract made during the progress of the work. Some thought this document should not be sealed, but he held that it should not be opened, except for the purpose for which it was deposited, without the consent of the builder and under certain restrictions. It would be well if, before the copy of quantities was sealed, the surveyor (who was in an independent position) could go through it for the purpose of dealing with any palpable errors in pricing, and for assurance that it was a correct copy of the original estimate. If this was not done, difficulties might arise, and surprising results might present themselves in settling up the accounts for extras and omissions. He alluded, for example, to such cases as where a builder had priced items at per yard instead of per foot, or *vice versa*. The total amount of his tender, which was presumably the lowest, need not necessarily be altered, as this might be unfair, but some re-adjustment might be made to avoid a possibility of the result he had suggested, and out of regard to fairness to all parties. He had in mind instances where a variation in an item which, palpably, should have resulted in an omission, ultimately, on the opening of the sealed copy of the price bills, resulted in a considerable addition, owing to a gross error in pricing. The fact of the builder knowing what was in his priced bill, and the architect not having this knowledge, sometimes assisted the former in getting out of his difficulty.

*Approximate Estimate of Works Partly Executed.*

"The surveyor may be called upon in works of any magnitude to value approximately portions executed and advise the architect as to the amount of his certificates for instalments from time to time. This is very necessary. I may give, as an instance, a case which came within my own experience. The quantities were taken out for a large building where the stone was supplied to the builder, ready worked, by a sub-contractor, with the approval of the

architect. The detail prices of the sub-contractor were filled in to the deposited priced copy of the quantities, in which the labour was separately set out. The architect made certain alterations in the details of his stonework, from the commencement and during the progress of the work. The builder, towards the close of the work, was asking for instalments evidently much in excess of what the contract sum would allow, and when asked for explanation said the sub-contractor for stone and labour was pressing him for money, and that, for the purpose of payment on account, he, the builder, had agreed with the sub-contractor as follows: To add the amount for all the labours together, and having found the proportional average amount of labour per foot cube of stone, to make up the total amount for 'stone and labour' in the quantities, and adopt this rate per foot cube for 'stone and labour' executed during the progress of the work. This price would have entitled the sub-contractor to the amount he was asking for. On looking into the matter I found that the calculation which the builder made was correct, as regarded the bills of quantities. Nearly all the architect's alterations in the actual work increased the size of the stone on the bed but not on the face labour. The sub-contractor, in estimating, had priced the cube stone at per foot very low and the detail labour prices high, so that, as the architect's alterations only added to the low-priced stone and not materially to the labour, the result, from actual measurements of variations, came out against the sub-contractor, who, finding both the original quantities and the measurement of variations correct, had to submit to what he called a loss, consequent upon his disproportionate and incorrect pricing. In very large buildings with detached blocks, where the works are carried out without uniformity, it is the more necessary for the surveyor carefully to estimate approximately for the instalments. In some large works provision is made for payment of these services, but in works of less magnitude there is often no such provision, though most surveyors would be ready to assist the architect in such matters if asked to do so.

*The Surveyor and the Architect.*

"There are also questions of custom, and of matters which arise involving a certain familiarity with arbitrations and with legal decisions, where the experience and special training of the surveyor may be useful in consultation with the architect. There are many other matters in which the surveyor may assist the architect from whom he gets his instructions, such as the clearing of a site on which are old buildings, party-wall questions, and light and air cases, and, occasionally, drains and sanitary matters connected with them. Such business is, of course, common to architects and surveyors. In private practice the employer seldom suggests the name of the surveyor who should take out the quantities, but the whole matter is left with the architect. In public matters it is now more often otherwise, and the boards or committees elect and appoint the surveyor to supply the quantities. The surveyor is not only generally indebted to the architect for his introduction to business, but often obtains assistance from him in seeing that his fees are paid by impecunious builders, or, in cases where his work has proved abortive by the employer altering his views, the architect will explain the nature and extent of the work done by the surveyor when otherwise it is often difficult to make the employer understand why he should pay him so much, or, indeed, anything at all.

*Failure of Builder During Progress of Work.*

"In cases where the builder becomes bankrupt during the progress of the works, great is the responsibility of the surveyor, both with regard to the accounts and the assistance it may be necessary to give the architect, in consultation on various causes and conditions in the specification and contract, and the employer's position with regard to these clauses. The troubles and difficulties with the position of the sub-contractors and other special tradesmen are sometimes such as tax the combined resources of the solicitor, architect, and surveyor to find a solution of the situation really beneficial to the employer. I knew of an instance where the employer's solicitors claimed, under the contract, the whole of the building as it stood at the time of the contractor's failure, although much work had been done by the various sub-contractors, for which the architect would in due course have specifically certified. Not having done so, the builder had not, of course, paid them when he stopped. Unless this situation had been met, grave difficulty would have occurred through the impossibility of getting similar materials from any one else, and the sub-contractors declining to furnish any more if the work executed by them were not paid for. The architect had not certified, the sub-contractor had not been paid, and the employer's legal representative claimed the building as it stood and everything on the site. It goes without saying that an employer dealing with a competent architect and a competent surveyor places himself entirely in their hands, and it is much better on every ground that he should do so. It is their duty to look after the employer's interest, and they will do it.

*Pricing and Settling up Accounts.*

"In the matter of pricing and settling up the builder's account, usually done with the builder or his representative, very responsible work is required of the surveyor in the correct rendering of the prices in the deposited bills of quantities or schedule and the making up of prices for those items not in the schedule. There is often much controversy as to these before a final settlement is arrived at. In my experience, when the variations on a contract have been properly gone into, the result is, more often than not, an agreeable surprise to the architect, who, knowing the alterations that have been made in carrying out the work and the absolute extra work that has been ordered, has not fully realised the extent of the omissions consequent on these alterations and additions, and has been preparing himself and his client for a large extra. I find, although the surveyor has taken out the quantities, the architect sometimes settles up the accounts. This plan I do not believe to be the best for the employer; the surveyor, who knows every detail of the work in taking off the quantities, is in the best position to go into the variations.

"Serious disputes of a complicated character frequently arise in connexion with the erection of buildings under contracts, sometimes ending in the Law Courts or the arbitration room, and in any case furnishing much important work for the surveyor.

*Surveys of Premises.*

"One of the most useful branches of our profession is that of surveying and reporting on the condition of premises prior to their being taken on repairing lease. How many persons have suffered by neglecting to take precautions in this matter and have found out, when too late, the liabilities they have incurred through not having a proper survey made before they signed a lease with, perhaps, stringent repairing covenants. These surveys and reports are generally as to structure, condition of general repair, and sanitation. In making structural surveys it is often found, in the case of old buildings, that there are defects which it may be unnecessary and unreasonable to repair, to have remedied or made perfect, but it is none the less necessary they should be excluded from the covenants a lessee may be about to take upon himself. In such cases they should be scheduled as being so excluded. Sanitary surveys and reports are, of course, frequently required by all sorts of clients. They may be very keen on taking a particular building, and may say they 'do not want any fads, they only want to know if the house is healthy to live in,' or they may say 'they have recently suffered from defective sanitation and that in this particular the house must be perfect.' Of course the surveyor will take care that, in either case, the sanitation is perfect.

*Surveyors and the Law.*

"It is essential, in spite of a little knowledge being a dangerous thing, for the surveyor to have more than a smattering of the law relating to buildings and the questions which may arise on them, and in consequence of them, before, during, and after their erection. We are indebted to the solicitors for a large share of our work, and it is the surveyor who has to interpret the repairing covenants of mysteriously worded leases, and translate into £ s. d. the various degrees of repair which from time to time come before him. In disputed accounts, the amount to advise a client to pay into Court is a matter requiring great consideration, as much cost may be saved or lost in such matters."

*Quantity Surveyors and the Institution.*

In concluding his paper, the author said:—"Since the writing of this Paper certain representations have been made to the Council of the Institution, with the view of obtaining a more distinct and definite recognition of the quantity surveyor members, and of increasing the sphere of usefulness of the Institution in their direction (a long-felt want), with the result that, under the guidance of our much respected and able President, the Council have approved and confirmed the appointment of a certain number of members to act as a Quantity Surveyors' Committee of the Institution, the quantity surveyors on the Council being *ex-officio* members of it. Any matters of interest connected with and affecting quantity surveyors' work may be considered by the Committee, whether brought under its notice by members of the Institution or otherwise. Matters brought before it may be discussed, resolutions passed, and reports made to the Council, who will deal with them as they deem right. This I am sure will be a great boon and advantage to every individual quantity surveyor member of the Institution, and I am glad to say that the Committee has already got to work."

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Mr. H. Chatfeild Clarke, in proposing a hearty vote of thanks, said that the architectural profession, as a whole, were deeply indebted to quantity surveyors for the very great aid they rendered architects in their work from beginning to end, and the more those two professions were kept separate in the carrying out of work, the better. The architect had quite enough to do with his plan and design, in the carrying out of the client's wishes, and with the specification, and the quantity surveyor could take a great deal of weight off his shoulders. He (the speaker) was very much indebted to the surveyors who had assisted him, and it was marvellous the manner in which they smoothed the way of the architect. He felt that it was a mistake for the architect to supply the quantities, and he advocated quantities being taken off by a separate surveyor. The status of the quantity surveyor was shown by the fact that, as a rule, the builder did not appoint quantity surveyors to take off the quantities. The builder was quite ready to accept the quantities of the architect's surveyor. As to whether quantities should form part of the contract, he never made the quantities part of the contract. He made the drawings and specifications.the basis of the contract, and left the quantity surveyor to settle with the builder as to any discrepancy in the quantities. The work was made easier if the quantities were not part of the contract. The writing of the specification by the architect he held to be a duty, and surveyors preferred to have the specification before them. As to verifying the quantities before sealing them, this was not generally done, but it was a very important matter. If it were done it saved a great deal of trouble in the end, and if there were any mistakes in them it was better to deal with those mistakes at first. They were all glad that a new committee had been formed by the Institution, and quantity surveyors were looking forward to that committee aiding them materially. As to urban and rural by-laws, it seemed to him that they would have to be re-considered, for it was absurd that the building regulations we have in towns should be applied to remote country districts, although he thought that a part of them should be. As to the plans of a learned judge for cottages he wished to build, he (the speaker) had seen them and he could hardly make head or tail of them. Still, that learned judge was treating the matter as one of principle, and no doubt the by-laws would have to be altered. Building was dear everywhere, and in the country it was impossible to build cottages at anything like a price that gave a reasonable return.

Mr. Gandy seconded the vote of thanks, and said that on large works he thought it was better for the builder to have his own quantity surveyor, so that if difficulties arose they could be thrashed out with the other surveyor. It did not matter on small works. As to quantities forming part of the contract, he did not think it mattered when the surveyors were well trained.

Mr. W. Woodward said that there were many works now being carried out by municipal surveyors which should be carried out by architects, though there were works which the borough surveyor was quite as capable of doing as the architect. He hoped that the protest in this matter would lead to good

results. He very much regretted the lowering of the remuneration of the quantity surveyor, but the surveyor was responsible for that himself. If the work was properly done by competent men, the money that was paid was well earned. He agreed that it was a waste of time for a young surveyor to spend a year in a builder's workshop, and if the young man had eyes to see he could get a great deal from visits to works in progress. He always made the quantities part of the contract. It was a perfectly fair thing if the quantity surveyor made a blunder, for that blunder to be rectified.

Mr. Stephenson said, as to fees for taking out quantities, that every job should stand by itself. He knew that their President had had work on jobs where 2½ per cent. had been the rate, and the remuneration was not great, whereas, on other work, where the rate was less, the remuneration had paid better. He did not think it mattered much whether quantities formed part of the contract or did not.

After a few remarks by Mr. Assiter,

Mr. Guy M. Nicholson said, as to surveyors' fees, one could not avoid competition. What surveyors did grumble about was the tendency of public bodies to reduce the fees and increase the responsibilities. The London County Council and the Metropolitan Asylums Board made their fees strictly competitive—the Board having had work done as low as ¾ per cent.—but at the same time they bound the surveyor to pay for any work which was left out. Every one knew that in the rush of work and in order to get large works done more than one surveyor had to be employed on the same set of drawings, and it was extremely likely that a mistake would occur. The fees paid were really only sufficient for doing the work; they did not compensate the surveyor for the risk of paying for part of the building. In one of the M.A.B. jobs there were thirty-six cottages all alike. It would be said that that was a good thing for the surveyor. So it was, but suppose he had made a mistake in those cottages—it was a mistake thirty-six times over! They did not mind competition, but they objected to public bodies demanding more and giving less. It seemed to him to be the fairest way to make the quantities part of the contract, because the primary object of the surveyor was to get a competitive price for the work. If the surveyor were found to make a great many mistakes the remedy would be that he would not get work, and would have to retire. As to the architect's specification, he agreed that it was easier to get notes of the special points that the architect wanted, and to trust to knowledge of that architect's general practice for the remainder. He had a specification the other day of a very ordinary building which consisted of rather more than 200 pages, and everything was described three times over and in three different ways, and the specification did not agree, and the details did not agree with the specification. It was practically impossible for architects satisfactorily to take off their own quantities, for a busy architect had his time pretty fully occupied without having to do with quantities, which required incessant practice to ensure success. Perhaps in a small country practice the architect could take off his own quantities, but in other cases it was not fair to the client to do so. He thought it was a great advantage to go through the priced estimate before it was sealed up. The London School Board (now merged in the L.C.C.) always did that, and it saved in many instances a very awkward positions arising. He agreed that it was an advantage on a big work for the builder to have a surveyor as well as the architect. That was compulsory in big Admiralty contracts.

The Chairman then put the vote of thanks, which was heartily agreed to, and Mr. Mann briefly replied.

It was announced that the next meeting will be on December 12, at 4 p.m., when Mr. J. Jopling will read a paper entitled "Notes on Clay Working, more Particularly Bricks and Tiles."

The meeting then terminated.

PROPOSED NEW CHURCH, ELGIN.—At a recent meeting of the congregation of the Elgin parish church it was decided to invite the following architects to send in plans for the new church, which is to be erected in that town:—Messrs. A. Marshall Mackenzie, Aberdeen; Robertson, Inverness; and Chalmers, Glasgow. The cost has been fixed at 4,000*l*.

## THE REBUILDING OF VICTORIA STATION.

THE enlargement of the West-end terminus of the London, Brighton, and South Coast Railway is only one item in an extensive scheme of alterations, of which the total cost will be at least 2,000,000*l*. For a long time past the company and the public alike have suffered from the limitations due to the small number of running tracks between Clapham Junction and Grosvenor-road, the narrowness of the Grosvenor Bridge, and the contracted nature of the approach to the terminus. From Clapham Junction to Grosvenor-road the permanent way runs along what is practically a continuous viaduct of brick arches with occasional girder bridges. This portion of the line has already been widened so as to accommodate four lines of rail; the widening of Grosvenor Bridge is now in progress, and extensive alterations in hand at the Victoria Station approach will shortly give ten roads available for traffic in place of the solitary pair—one "up" and one "down"—over which all trains now have to pass. The construction of new works outside the present station has made it necessary for the Elizabeth and Eccleston bridges to be raised by some 6 ft. In the case of the former bridge exceptional difficulty has been encountered owing to the fact that it was found necessary to sink to a depth of 30 ft. before reaching a sufficiently firm stratum of earth for the foundations. The altered level of the roadways upon these two bridges has involved a corresponding alteration in the level of Buckingham Palace-road.

We may here recall a curious statement connected with that portion of the line between Victoria and Grosvenor-road station. At the time when the original Bill of the railway company was before Parliament considerable opposition was raised to the construction of the line by residents in the neighbourhood of the proposed terminus and particularly by the Duke of Westminster. The chief reason alleged was that the noise caused by trains would constitute an intolerable nuisance, and to appease local sentiment the company undertook to roof in the whole of the line from the terminus to a point not very far from Grosvenor-road, the object being to confine or deaden the sound of the trains. Having obtained their Bill, the company were bound to erect the long line of roofing, but in consequence of a singular oversight on the part of those representing the local residents, no stipulation was made compelling the company to keep the construction in repair. The covering of the railway was duly executed, consisting of iron columns and other members supporting iron roof systems covered with glass. After a time the company seem to have discovered the flaw in the Act of Parliament—through which they drove their trains in substitution for the proverbial coach and horses—and decided to let the line of roofing fall into a state of decay. Broken glass was not replaced, and as portions of the unpainted ironwork became dangerous through oxidation they were gradually removed. Until quite recently considerable portions of the old columns and roofing still remained on this portion of the railway, but they have been removed lately under powers granted by the new Bill obtained by the Company.

Turning now to the new terminus, the width will be 320 ft. and the length 1,500 ft., as compared with the present dimensions of 230 ft. wide by 800 ft. long. The future train accommodation will include four island platforms and one side platform, all 1,100 ft. long, so as to permit two trains to occupy each of the new platform edges at one time. Unfortunately the scheme of the new station is seriously impaired by the existence of the Grosvenor Hotel, occupying a position which would have been invaluable for traffic requirements and the convenience of passengers. Like the directors of other railway companies, the directors of the London, Brighton, and South Coast line were unable to foresee the enormous development that has taken place in railway traffic, and in permitting the erection of the hotel on the site chosen they left a heritage of trouble to their successors. Subject to this criticism the general arrangement of the new station is good. Access to the departure platforms will be gained as at present from the forecourt, and egress from the arrival platforms will be afforded by a new and commodious exit leading into Buckingham Palace-road. At one side of this exit a new parcels office, connected by a subway running the entire width of the station, has already been built, and from the same point a wide roadway for vehicular traffic will be carried through the station to the highway bridge outside. The present mean appearance of the forecourt will be improved by the erection of a wing to the Grosvenor Hotel, extending as far as the miserable sheds which form the front of the South-Eastern and Chatham Railway station, and on the ground floor of the hotel extension will be situated the booking halls, waiting-rooms, and offices.

Unfortunately there is nothing satisfactory to report relative to the architectural treatment proposed for the façade of the hotel extension. It might have been hoped that the company would have realised the necessity for erecting a structure in every way worthy of the important site in their hands. In our opinion the only appropriate way of dealing with the buildings on the forecourt of the station would have been by joint action on the part of the two railway companies with the object of continuing the hotel buildings along the entire frontage, and, above all, by enlisting the co-operation of a competent outside architect so as to ensure that the new structures should be architecturally worthy of the importance of the occasion and of the site. That this point has been strongly and authoritatively brought before the Board of Directors we have reason to know. But the only answer was in the shape of a *non possumus*; the façade is to be carried out by the Company's engineer; and we only too well know what that is likely to mean.

## THE QUANTITY SURVEYORS' ASSOCIATION.

AN ordinary general meeting of this Association was held on Monday, at the Duke's Salon, Holborn Restaurant, Mr. Walter Lawrance, F.S.I., President, in the chair.

The Hon. Secretary, Mr. F. B. Hollis, read the notice convening the meeting, and also the minutes of two previous meetings, of November 18, 1903, and March 2, 1904, which were confirmed.

The President then made a statement in reference to the position of the Association and what had been accomplished since the confirmation of the Articles of Association at the meeting on March 2. The articles were sent to the Board of Trade, and the Association was subsequently informed by the Board that objections had been received from the Surveyors' Institution to the grant of a licence to the Association. July 20 was appointed by the Board to receive deputations from the Surveyors' Institution and the Association to hear objections and replies thereto, but though the Association's representatives were ready to attend they were informed on July 19 that the Surveyors' Institution did not intend to send a deputation, and that practically ended the opposition. The petition of the Association then went before counsel of the Board of Trade, and his amendments were received on September 10, and these amendments, only one of which the Association could take serious objection to, were approved by the Council of the Association, and on October 12 the licence was finally granted. The one serious alteration the Board of Trade made was as to the use of the letters "Q.S.A." The Board intimated that they could not grant a monopoly of any letters: that could be done only by Royal Charter. The members could use the letters after their names, but so could outsiders if they wished.

The President then dealt at some length with the objections of the Surveyors' Institution and the replies thereto. Proceeding, he expressed to Mr. Hollis, the Secretary, the thanks of the Council and the members for the zeal and heartiness Mr. Hollis had thrown into his work; the grateful thanks of the Association were due to him.

The President then referred to the advantages to young quantity surveyors of admission to the Association as students, and he stated that it was the intention to bring forward for debate subjects of interest to quantity surveyors. One grievance they had was that an utterly incompetent person was allowed to issue so-called bills of quantities and receive payment for them. That was the cause of much unfairness; either the building owner or the contractor must suffer in a greater or less degree. Up to the present time there had been no restraint on the issue of bad quantities, and, what was worse for the protection of the profession, there had been no punishment or exposure of the offending party by the

institutions of which he might be a member. The Association, in clause 13 of the Articles, dealt with this evil. Among other evils, the greatest obstacle they had to contend with was the fact that the public did not know them, and did not understand their work, and therefore could not know its great importance. Who was it who really decided what money was to be paid the builder? Undoubtedly the quantity surveyor's figures governed these matters, and very few of the general body of building owners understood this. One of the objects therefore should be to let the public have a better knowledge of the quantity surveyor and his duties. The outcome of this would be (1) the direct appointment of the quantity surveyor by the building owner, and (2) the payment of the quantity surveyor's fees by him. Why should the custom be continued of appointment by a third party and payment by a fourth? There was much to be done to improve the conditions of appointment and selection of quantity surveyors by public bodies. The conditions of some appointments were an absolute disgrace to the profession, seeing that quantity surveyors were willing and ready to accept such terms. As to the actual conditions of building contracts, the quantity surveyor had a very important question to settle—*i.e.*, should the bill of quantities be the basis of the contract? There was much to be said on this subject, and also as to the wording of the clause to that effect in the contract; the clause in the present form of contract as agreed between the Royal Institute of British Architects and the Institute of Builders, etc., being, in his opinion, open to dispute owing to recent legal decisions. The nomination of the arbitrators was also worthy of very serious attention; in most instances the questions to be arbitrated upon were those with which a quantity surveyor should deal and not an architect, and all should do their best to have quantity surveyors' names inserted in the contract. Another very important question was that of a scale of fees. A settled scale of fees might no doubt prevent one from getting an occasional good fee, but at the same time it would also be a preventive against quantity surveyors being offered an inadequate fee, and might on the whole be for the general welfare. He most strongly protested against the idea that because a job happens to be a large one, that the fee should reach the lowest ebb as regards percentage, especially with their clause 13; the extra responsibility, care and anxiety required to carry through a large job, or a job with very heavy quantities of particular work, deserved recognition. A scale of fees, if ever arranged, could not be based on the size of a job only—the class of work, the amount of detail required in the quantities, and, not least, the amount of responsibility thrown on the quantity surveyor must all be considered. Speaking of detail caused him to mention one point they should like settled; that was the measurement of stone. They were not pleased after spending weary days over measuring labours, to find them unpriced, or if priced, with prices made to agree with the estimator's idea of the price per foot cube, irrespective of the quantities of labours given in the bills. He should like to see some arrangement arrived at with contractors on this point.

The Association, he hoped, would be able to keep a register open to members for situations vacant and for assistants, temporary or permanent, requiring situations. Questions on professional subjects, addressed to the Secretary, would be laid before the regular meetings of the Council, and answered by them or referred to experts' opinion. The Council propose holding the first annual dinner of the Quantity Surveyors' Association in February. The ordinary general meeting, in accordance with Article No. 101, would be held in April, and the annual general meeting in May. It is proposed to hold examinations in May. The Council would be glad to receive the offer of papers fully discussing or to inaugurate discussions on any subject of professional interest.

Mr. Nixon asked if there was any chance of getting a Royal Charter so that they might use the letters Q.S.A.?

The Chairman said there was not the slightest doubt that the Council would do everything they could to obtain a Charter as soon as possible, and there was no doubt that they would meet with strong opposition.

In answer to other questions the Chairman said they would hold regular meetings as soon as they could arrange a syllabus. As to forming a library, the Association in time would, no doubt, take all the steps they could to educate the young surveyor and to provide information for older members, and a library would naturally be one of these steps.

Mr. Gate, Vice-President, said he did not think that anyone not a member of the Association would dare to use the letters Q.S.A., for he would be liable to serious exposure and disgrace. What the Association wished was that the public should get to know that those letters indicated that a man using them was prepared to pay for any errors he might make in his quantities. For his part he meant to use the letters and for that reason, and if an outside quantity surveyor used them he would be exposed.

A vote of thanks to the Chairman for presiding and to Mr. Hollis for his services as secretary brought the meeting to a close.

## THE BUILDERS' BENEVOLENT INSTITUTION.

THE fifty-seventh annual dinner of the Builders' Benevolent Institution was held in the Whitehall Rooms, Hotel Metropole, W.C., on Thursday evening last week, Mr. W. Downs, President, presiding. There were also present Colonel G. Haward Trollope and Messrs. C. J. Bennett, J. W. Blackham, H. W. Bayne, H. H. Bartlett, H. D. Blake, C. Bussell, C. Braby, H. A. Bartlett, J. T. Bolding, J. M. Beveridge, L. Bennett, A Burnell-Burnell, F. A. Crisp (Master of the Carpenters' Company), J. Howard Colls, T. Sturge Cotterell, W. Casselton, T. E. Clarke, T. I. Cammell, R. Downs, T. Gregory, T. H. Griffiths, H. Gibbs, C. Gude, W. Higgs, F. Higgs, C. G. Hare, B. Hellyer, W. M. Hill, T. Hall, T. A. Hunt, C. V. Hunter, A. W. King, D. W. McInnes, H. Le Marchant, F. G. Minter, S. W. Neighbour, G. N. Nicholson, A. E. Parker, J. Randall, A. Ritchie, J.P., J. Sabey, S. Stiff, T. Stirling, G. Gilbert Scott, E. Toms, C. Watkins, S. Michael Young, Douglas Young, T. Costigan, Secretary, and others.

The loyal toasts having been honoured, Mr. B. Carter proposed "The Imperial Forces," to which Colonel G. Haward Trollope suitably responded.

The Chairman then gave the toast of the evening, "The Builders' Benevolent Institution." He said that the Institution was established fifty-seven years ago, since which time some 276 pensioners had been assisted. That gave an average of about five new pensioners each year, which might seem to be a small number until they realised that the Institution was limited in its work by the amount of the funds, and he appealed to the friends of the charity for help. At the present time there were thirty-one men on the list and twenty-nine widows—the men received 42*l.* a year and the widows 21*l.*—and he might add that husbands and wives were not separated. One point he would strongly impress on them was as to the way in which the Institution was managed. He knew of no similar institution that was managed on more economical lines, for of the total income received some 89 per cent. was given to the pensioners, which left 11 per cent. to the management. This was made possible mainly owing to the care of their Secretary, Mr. Costigan, assisted by the staff and a very able and willing committee, who personally looked into each case and saw that only those properly qualified came on to the list. On behalf of the subscribers and donors, he thanked the committee for their care of the affairs of charity. Their aim seemed to be to do as much good as they possibly could with the funds at their disposal and at the same time to consider the feelings of the pensioners as much as possible. There was a balance on the current account of 350*l.* The income was derived from builders, builders' merchants, architects and surveyors, and others. The committee thought, and he agreed with them, that they ought to have the support of more builders; if it were not for the support of other friends, the trade list in itself would be very small. The committee could not expect every merchant's firm to subscribe largely every year, but they felt that every builder ought to be a subscriber. The Bricklayers and Tylers Company, he might add, had given room in their almshouses for two pensioners. In conclusion, he asked them to think of the blessing and comfort they could afford by their help to many who, without aid, would be doomed to an old age of want and suffering.

Mr. Alex. Ritchie, J.P., then gave the toast of "The City Companies." He thought that the City companies ought to help such charities as the Builders' Benevolent Institution. They did a great deal in furthering the cause of charity, and they were always willing, not only in the City but in greater London, to extend their munificence and bounty.

Mr. F. A. Crisp, Master of the Carpenters' Company, briefly acknowledged the toast.

Mr. J. Howard Colls then proposed "The President," and Mr. Downs suitably replied.

Mr. F. Higgs proposed the toast of "The Architects and Surveyors," coupled with the names of Mr. G. Gilbert Scott and Mr. Guy Nicholson. Architects of the present age had no reason to be ashamed of their position in comparison with past ages. As we went through London to-day and saw the fine buildings—some of them he might call dreams in stone—we saw that the present-day architectural works were equal to those of the past and gave promise of a great future for the profession. Much as builders owe to architects, they had a more intimate knowledge with quantity surveyors, in whose hands they generally felt safe.

Mr. G. Gilbert Scott, in responding for the architects, said he felt honoured in being called upon to reply for their grand art. The Institution was for the benefit of those builders who had fallen in the battle of life, and the fact that architects were invited to the dinner showed a fine spirit of forgiveness, and he had no doubt that architects reciprocated that feeling. Architects could not get on without the builders, nor unless there was a friendly feeling with the men who put their dreams and castles in the air into concrete shape and form. He had heard it said that the builder was the architect's natural enemy; he did not believe it, and certainly the builder would never be his enemy.

Mr. Guy Nicholson having responded for the surveyors,

Mr. Val Hunter porposed "The Vice-Presidents, Committee, and Stewards." The men connected with the charity were business men and they extended their charity wherever possible.

Mr. J. T. Bolding, in replying, said the work of carrying on the affairs of the charity was considerable, but the reward was great when they saw the great good that was done. During the last two or three years much had been done to improve the position of the pensioners. The amount of the pension had been increased by 3*l.* a year; the pensioners were elected after much scrutiny but without putting them to the trouble of canvassing and of a contested election; the limit of age had been decreased from sixty years to fifty-five, and they had saved the pensioners much trouble in making it no longer necessary for them to come month by month to collect their small pensions. In the majority of cases the amount was sent by post. The Institution had an assured income of only 1,100*l.* per annum and the money to pay to pensioners actually amounted to 2,100*l.*, so that they needed a thousand pounds to meet their liabilities. There was no other institution managed with less expense; they paid 2,100*l.* a year in pensions and their total expense for printing, salaries, rent, etc., came to 260*l.* only per annum.

During the evening lists of subscriptions and donations were read, the total amount being 894*l.* 2s., of which 738*l.* 7s. 6d. was on the President's list. The President himself contributed 100*l.*, the Institute of Builders 50*l.*, and Messrs. G. Trollope, Sons and Colls & Sons, Ltd., 20*l.*

## THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, S.W., Mr. J. Williams Benn, M.P., Chairman, presiding.

*Loans.*—On the recommendation of the Finance Committee, it was agreed to lend Camberwell Borough Council 8,725*l.* for paving works; 12,000*l.* for public baths purposes, and 10,000*l.* for erection of lodging-houses; Greenwich Borough Council, 950*l.* for purchase of site for public library; Hackney Borough Council, 5,339*l.* for paving works; and Woolwich Borough Council, 4,500*l.* for granite paving works, and 1,000*l.* for assisted wiring of consumers' premises for electric lighting, etc. Sanction was also given to Lambeth Borough Council to borrow 2,044*l.* for street lighting purposes, and to Shoreditch Borough Council to borrow 9,189*l.* for street improvement and paving works.

*Port of London Bill.*—The Parliamentary Committee recommended that a Bill be promoted in the next session of Parliament relative

to the administration of the Port of London, in accordance with the resolutions passed by the Council on November 8, and that the costs and expenses of promoting the Bill be defrayed out of the county fund.

After discussion the recommendation of the Committee was carried by eighty-seven votes to twenty-eight.

*Drury Lane Theatre.*—In reply to Sir Algernon West and Mr. Johnson, Mr. Yates stated that the result of the arbitration as regards the Council's requirements relative to Drury Lane Theatre was that 143 requirements were made by the Council, and of these 111 were confirmed absolutely by the arbitrator. Fourteen were modified and confirmed, and eighteen were not confirmed, although the arbitrator said some of them were desirable, but that they were matters of management and not of structure. Consequently he could not confirm them, but he thought the Council were justified in the line they had taken. The real test as to whether the Council had succeeded arose on the cost of the arbitration, and the arbitrator had decided that the Drury Lane Theatre Company should pay the whole of it.

Mr. Straus asked if it would not have cost the company less if they had accepted the Council's requirements in the first place instead of going to arbitration.

Mr. Yates replied that he had not the official figures before him, but he thought the reply would be in the affirmative.

*Brickmaking Operations: Norbury Estate, Croydon.*—The Housing of the Working Classes Committee recommended that an estimate of 4,000*l.* in respect of brickmaking operations on the Norbury Estate, Croydon, durng the season 1904-5 be approved. The Finance Committee, in reporting upon the matter, pointed out that 10,500*l.* had already been authorised for brickmaking on the estate. Up to the present between 6,000,000 and 7,000,000 bricks had been made, and were now lying on the site. Owing to difficulties with the Croydon Corporation, building operations had not yet commenced, and this delay altered the financial aspect of the operations.

Mr. E. White in moving that the recommendation be referred back, said the losses were so serious that he hoped the Council would not go on piling up a sum which would have to be added ultimately to the cost of erecting houses for the working classes. It seemed to him that it was one of the most disastrous experiments the Council had ever made.

Mr. Gaskell seconded the amendment.

Mr. Phillimore said he thought that if they made good bricks last summer it would be a pity to stop the work. The losses in the past were due to bad seasons and poor management.

Mr. Hunt remarked that one-third of the bricks on the ground would have to be carted away and shot on the dust-heap.

Mr. Dew argued that they had to move a great clay mound to the site to enable them to build, and it was cheaper to turn it into bricks than to cart it away.

Sir J. McDougall contended that the bricks they made last season showed a profit of from 10s. to 12s. 6d. a 1,000.

The amendment was defeated, and the recommendation adopted.

*Housing.*—The Housing of the Working Classes Committee also reported that Redman-buildings on the Portpool-lane frontage of the Bourne Estate, Holborn, have been almost completed. The buildings contain accommodation for 710 persons in twenty-seven tenements of four rooms, fifty-eight tenements of three rooms, thirty-one tenements of two rooms, and eleven tenements of one room. The third section of Radcliff-buildings on the Clerkenwell-road frontage has also been completed, accommodation being therein provided for 208 persons in six tenements of four rooms, twenty-two tenements of three rooms, six tenements of two rooms, and two tenements of one room.

*Coleridge's Residence.*—On the recommendation of the Museums Committee, it was resolved to affix a memorial tablet to No. 71, Berners-street, to commemorate the residence thereat of Samuel Taylor Coleridge.

The Council adjourned at a quarter-past six.

*Premises for the Council.*—Among the notices of motion is the following in the name of Mr. J. Piggott:—

"That, having regard to the fact that the Council's present rental in respect of the inadequate and disconnected chief offices, comprising over five-and-twenty separate blocks of buildings, amounts to over 34,000*l.* per annum, and also having regard to the increasing extra expense, loss of time, and inconvenience caused by the departments of the Council's service being so far removed from each other, and to the pressing need for adequate office accommodation for the staff, it be referred to the Establishment Committee to consider and report as quickly as possible upon sites available for County Hall and offices, and that the Committee do submit a definite recommendation for the acquisition of the site which, in their opinion, is most suitable for the Council's purposes."

## *ARCHITECTURAL SOCIETIES.*

THE NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. William Glover, F.R.I.B.A., past President of this Association, who has in recent years given 1,000*l.* in consols and other valuable donations towards the permanent premises and to aid the work of the society, has now promised further aid in the following letter he has written to the Hon. Secretary:—

"66, Tyrwhitt-road,
Brockley, London, S.E.,
Nov. 22nd, 1904.

A. B. Plummer, Esq., F.R.I.B.A.,
Hon. Secretary,
Northern Architectural Association.

My dear Mr. Plummer,—At our meeting in London, on a deputation to the council of the R.I.B.A., I promised, if they arranged their meetings in Newcastle, that I would commemorate the event by a gift for the benefit of the profession. This was agreed to, and I have therefore much pleasure in giving 1,000*l.* for the following objects, and will discuss the division with your council:

1st. Additional half, to complete the purchase of the house for our Association, which I have been so anxious to see accomplished.
2nd. The Architects' Benevolent Fund.
3rd. The scheme of Sir Aston Webb, R.A., for the higher education of architects.

The conditions for the two latter are that the funds are invested in trustee securities; the nominations of the council of the Northern Architectural Association to be first considered, so far as the interest on the funds will allow. This will enable me to carry out three leading principles which have influenced me through life:—1st. To spend my money where I made it. 2nd. To assist those poorer than myself. 3rd. To endeavour to leave the world better than I found it. I do sincerely hope that the effort made for the higher education of our students will make them better men than we are. With kindest greetings to you and all my old colleagues and friends,

Yours very sincerely,
WM. GLOVER."

ARCHITECTURAL ASSOCIATION CAMERA AND CYCLING CLUB.—On Tuesday, 29th November, Mr. Chas. B. Howdill, A.R.I.B.A., President of the Leeds Camera Club, gave a lecture on "Colour Photography for Architects." Commencing with a short description of the composition of light the lecturer dealt fully with the various processes of colour photography at present employed, and showed slides illustrating each. Mr. Howdill then showed a number of slides of modern and mediæval stained glass taken by various processes, some taken by a combination of telephotography and colour photography, and finished his paper with a short demonstration of the Sanger Shepherd process. Many of the slides shown reproduced the colours of old glass, particularly that in the "Seven Sisters" window at York Minster, in a remarkable manner. Mr. W. Wonnacott, in proposing a vote of thanks to Mr. Howdill, referred to his own troubles in practising colour photography and also to the beauties of the Lippmann process, which had not been used by Mr. Howdill. Mr. Wonnacott also briefly described the new Sanger Shepherd camera, which would reduce the time of exposure very largely, and touched upon the cost of the process. Mr. J. D. Crace seconded the resolution, which was carried with acclamation, and the meeting terminated with the announcement that on December 20th Mr. Arnold Mitchell would speak on "Photography for Architects."

# Illustrations.

## CHRISTIAN SCIENTIST CHURCH.

THIS drawing, which was exhibited at the Royal Academy, represents a building of some interest in itself and because it is designed for a special sect, and hence we should have been glad if the architect would have furnished us with some little information in regard to the intention of the plan and design. All we have been able to obtain from him, however, after two applications, is that it is built with 2 in. common bricks and roofed with green slates, and that the gable front is in cement whitened. Further than that we must leave our readers to draw their own deductions.

## CHELSEA BATHS.

THE scheme was chosen in a limited competition by the Chelsea Corporation.

The cost of the first section of the scheme, which is to be carried out immediately, is 21,000*l.*, and includes the men's swimming bath and slipper baths for both sexes. Artesian wells and storage tanks are also to be carried out at a cost of about 3,500*l.* The ladies' swimming bath and Turkish bath are deferred till a future date, and are estimated to cost another 10,000*l.*

The fronts will be carried out in red brick with Portland stone dressings, and the internal fittings will be of a simple and serviceable character, such of the old fittings as are sound being re-used, together with the existing engines and most of the laundry fittings of the present baths.

The elevations are designed to harmonise with those of the newer portions of the Town Hall, that being one of the conditions laid down by the Corporation.

## NEW CHURCH OF ST. ENDA AT SPIDDAL, CO. GALWAY.

THIS church is designed in the spirit of the work seen in early Irish buildings, not necessarily copied in any part, but adopting those features which are characteristic of that early period, and developing them to suit modern requirements, and the material at hand.

The situation of the church being an exposed one on the Atlantic seaboard, it was deemed necessary to finish the tower with a parapet instead of projecting eaves. The north transept is roofed in two spans, and has a parapet returning against the tower; this gives an appearance of mass and solidity, and marks this part in contrast with the low eaves of the main building.

The sacristy is placed at the end of the south transept, and within this transept is a gallery for the choir. The north transept will contain a small lady chapel, and pews for the Lord Killanin, one of the founders.

The chancel arch will be semi-circular, in two orders, the inner springing from long corbels with carved terminations. It will be constructed in finely-chiselled limestone, and provision will be made for embellishing it with carving at a future time. The roof will be of open timber-work, and covered with Killaloe slates, in random sizes. The ridge covering will be cut out of solid sandstone. The porch doorway will have round arches recessed in three orders and left plain for future carving.

The jambstones of doors and windows and the arches and internal piers will be of Galway limestone. The workmanship will mostly be of local production. The masonry, which is to be a special feature, will be done by local masons; the leaded lights will be by Irish artists, and executed in Dublin.

The foundation stone was laid on October 9, and the building is now well advanced.

The architect is Mr. W. A. Scott, of Drumcondra, near Dublin.

## THE MILL HOUSE, ALDEBURGH.

WE published in our issue of September 10 a drawing representing the house which had been built, from the designs of Mr. R. A. Briggs, in the form of additions to a disused windmill near Aldeburgh, retaining the mill as an integral portion of the house.

With no disparagement to the drawing, the two photographs subsequently sent to us by the architect, and which show the building from other points of view, seemed to us to bring out the picturesque effect of this rather novel experiment even better than the drawing, and we thought it therefore quite worth while to give these two further illustrations taken from the actual building.

A plan, and a short description of the work, were given in connexion with the former illustration in our issue of September 10.

The photographs which are reproduced were given to the architect by Messrs. Henry Hope & Sons, of Birmingham, who supplied all the casements for the building. The general contractor, as before mentioned, was Mr. Knowles, of Aldeburgh.

WAR CORRESPONDENTS' MEMORIAL.—At the annual dinner of the London District of the Institute of Journalists, the Chairman, Mr. J. D. Irvine, announced that the memorial to the war correspondents who fell in the South African War, 1899-1902, will be unveiled in St. Paul's Cathedral on January 14. The memorial has been designed by Mr. W. Goscombe John, A.R.A.

## APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses :—

*Islington, North.*†—A one-story shop upon part of the forecourt of No. 15, Highgate-hill, Islington (Mr. H. Williams).—Consent.

*Islington, North.*†—Buildings upon part of the forecourts of Nos. 11 and 13, Highgate-hill, Islington (Mr. C. W. Callcott for Mr. J. W. Galton).—Consent.

*St. Pancras, South.*—A porch in front of the University College Hospital, Gower-street, St. Pancras (Mr. P. Waterhouse).—Consent.

*Hammersmith.*—Bay-windows at the "Lord Nelson" beerhouse, Masbro'-road, Hammersmith (Messrs. N. Parr & A. E. Kates for the Royal Brewery, Brentford, Ltd.).—Consent.

*Chelsea.*—A projecting hood over the doorway of a building upon a site abutting upon the western side of Sloane-street and northern side of Basil-street, Chelsea (Mr. F. S. Chesterton for Mr. G. A. Cobb).—Consent.

*Dulwich.*—A porch in front of a detached house on the southern side of Court-lane, East Dulwich, westward of "Charnwood" (Mr. H. J. Welch for Mr. R. G. Ash).—Consent.

*Fulham.*—Porches, with balconies over, to Nos. 42, 44, 46, and 48, Stevenage-road, Fulham (Mr. W. Hawkins).—Consent.

*Hampstead.*†—The retention of a pent at the entrance, and a wooden balustrade over the one-story addition, to No. 27, Platt's-lane, Hampstead, abutting upon Clorane-gardens (Mr. J. Murray).—Consent.

*Holborn.*—A projecting sign in front of No. 219, Tottenham Court-road, Holborn (the Brilliant Sign Company, Ltd.).—Consent.

*Kensington, South.*—A boxroom upon an existing one-story building on the east side of No. 32, Campden-grove, Kensington (Messrs. J. W. Duffield & Son for Mrs. Finney).—Consent.

*Holborn.*—That the application of Mr. R. Robertson for an extension of the periods within which the erection at the proposed men's lodging-house, Drury-lane, Holborn, of projecting staircases and an oriel window, was required to be commenced and completed, be granted.—Consent.

*Hammersmith.*—A parish hall on the south side of Great Church-lane, Hammersmith (Mr. W. D. Caröe for Rev. J. Parry).—Consent.

*Hammersmith.*—Buildings on the north side of Uxbridge-road to abut also upon the east side of Ormiston-road and west side of Bloemfontein-road, Hammersmith (Messrs. Palgrave & Co. for Mr. R. Le Butt).—Refused.

*Hammersmith.*—A building on the north side of Dunraven-street, Hammersmith, to abut upon Adelaide-road (Messrs. Boyton, Sons, & Buckmaster for Mr. J. Allen).—Refused.

*Paddington, North.*—An iron and glass covered way to residential flats known as "South Block," Nos. 5 and 7, Maida-vale, St. Marylebone (Messrs. Boehmer & Gibbs for Messrs. G. H. & A Bywaters & Sons).—Refused.

*St. Pancras, East.*—A one-story addition at the rear of Nos. 60 and 62, Pratt-street, St. Pancras, to abut upon Camden-street (Mr. S. Emanuel).—Refused.

*Wandsworth.*—Two buildings on the eastern side of Gassiott-road to abut also upon Okeburn-road, and three buildings on the northern side of Church-lane to abut also upon Gassiott-road and Eswyn-road, Wandsworth (Mr. W. Bartholomew).—Refused.

*Width of Way.*

*Hampstead.*—A deviation from the plan approved for the erection of the new Hampstead hospital in Haverstock Hill, Hampstead, with the boundary fence at less than the prescribed distance from the centre of a roadway leading to the North-Western Hospital, so far as relates to the land to be dedicated to the public and the position of a portion of the western boundary of the site (Messrs. Young & Hall for the Committee of the Hospital).—Consent.

*Clapham.*†—A billiard-room on the western side of Cranmer-court, Clapham-road, Clapham, adjoining the Clapham Assembly Rooms, with external walls at less than the prescribed distance from the centre of the roadway of Cranmer-court (Mr. A. B. Hudson).—Consent.

*St. Pancras, East.*—A one-story cart-shed at the rear of No. 39, St. Augustine's-road, St. Pancras, with external walls at less than the prescribed distance from the centre of the roadway of Murray-mews (Mr. E. H. Abbott).—Consent.

*St. Pancras.*—A one-story building at the rear of No. 5, North-villas, Camden-square, St. Pancras, with external wall at less than the prescribed distance from the centre of the roadway of Camden-mews (Mr. W. E. Sanders for Mr. A. H. Rosevear).—Consent.

*Finsbury, Central.*†—A warehouse on the south side of Baker's-row, Farringdon-road, Clerkenwell (Mr. E. Power for Mr. Collins).—Refused.

*Lines of Frontage and Construction of Building.*

*Hampstead.*—Retention of a wood and iron tool and cycle shed at No. 6, Briardale-gardens, Hampstead, abutting upon Clorane-gardens (Mr. R. V. Hart for Mr. L. Hardy).—Refused.

*Width of Way, Line of Frontage, Projections, Space at Rear and Means of Escape at Top of High Buildings.*

*Holborn.*—A building to be known as the Cranston "Ivanhoe" Hotel, on a site abutting upon Great Russell-street, Bloomsbury-street, Streatham-street, and Dyott-street, Holborn (Mr. T. D. Rhind, for the Cranston London Waverley Hotels Company, Ltd.).—Consent; also, means of escape in case of fire proposed to be provided on the sixth (top) story of the building.—Consent.

*Formation of Streets.*

*Lewisham.*—That an order be issued to Messrs. Norfolk & Prior refusing to sanction the formation or laying out of streets for carriage traffic to lead out of the east side of Ravensbourne-park and the north side of Westdown-road, Lewisham (for Mr. A. E. Rudd).—Refused.

*Space at Rear.*

*Strand.*—A modification of the provisions of section 41 of the Act, with regard to open spaces about buildings, so far as relates to the proposed erection of an addition to the existing building on the space between No. 10, Brewer-street, and Nos. 35 and 36, Bridle-lane, St. James', Westminster (Messrs. H. & H. A. Furber for the executors of W. H. Corfield & H. M. Pike).—Consent.

*Means of Escape from Top of High Buildings.*

*City of London.*—A deviation from the drawing approved, showing the means of escape in case of fire, proposed to be provided in pursuance of section 63 of the Act, on the topmost story of the premises of the Liverpool and London and Globe Insurance Company, at the corner of Lombard-street and Cornhill, City, so far as relates to an alteration in the position of one of the step ladders and of a gangway across the roof of the building (Mr. J. Macvicar Anderson).—Consent.

*Dwelling-houses on Low-lying Land.*

*Camberwell.*—That a licence be granted under section 122 of the Act to Mr. P. Blakeway for the erection of eleven dwelling-houses on low-lying land abutting on Clarendon-street, Camberwell (Messrs. E. P'Anson & Son).—Consent.

***The recommendations marked † are contrary to the views of the local authority.***

## *ENGINEERING SOCIETIES.*

JUNIOR INSTITUTION OF ENGINEERS.—A large number of the members, accompanied by the President, Mr. W. H. Lindley, and the Chairman, Mr. Samuel Cutler, Junr., availed themselves of the opportunity for visiting recently the Central Station of the South Staffordshire Mond Gas (Power and Heating) Company at Dudley Port, and the most recent additions to the Birmingham Corporation Gas Works at Nechells. At the former they were received by the managing director (Mr. Howell), the resident engineer (Mr. Lindop), and other gentlemen. Mr. H. A. Humphrey, the company's consulting engineer, was prevented at the last moment from being present. The station, the first as yet erected, occupies a position which is practically the industrial centre of gravity of the district, comprising 120 square miles in South Staffordshire, over which the company have powers. There are to be four units, each of eight producers, and the first unit, together with a complete set of spare towers, is now ready for working. Each producer is capable of gasifying one ton of fuel per hour throughout the day and night. The coal elevators, storage bunkers, producers, superheaters, gas mains, mechanical washers and towers, the lead acid towers for sulphate of ammonia, and the cooling towers were all examined with much interest. Steam is raised by means of climax vertical boilers arranged for burning small coal with forced draught, and also for firing by gas. Fraser and Chalmers' compressors for putting the gas under pressure for distribution were seen in the machinery house, and two vertical Westinghouse gas engines driving various electric motors used in connection with the plant and for lighting. The pipes for conveying the gas to Wolverhampton, Walsall, and intermediate towns have been laid by Messrs. John Aird & Sons, and are mostly of the steel locking type made by Mephan Fergusson. At the Birmingham Gas Works, on behalf of the engineer-in-chief, Mr. Henry Hack, by whom the whole plant has been designed and carried out, the members were welcomed by Mr. W. Chaney and Mr. T. R. Murray. A fine example of an inclined retort installation was seen here, the house being 324 ft. long by 114 ft. wide, with semi-circular "arch rib" roof of one span. There are four benches of retorts, each bench consisting of thirteen settings, eight retorts per setting, and all heated on the regenerative principle. The special mechanical appliance for dealing with the coke, hydraulic crane of 75 ft. radius, atmospheric and water condensers, the exhausters, washers, purifiers, and meters were shown, and the special features in their construction and operation explained. A carburetted water gas plant capable of producing over 6 million cubic feet of gas per day was also seen, consisting of generators, carburettors, superheaters, condensers, washers, blowers, purifiers, &c. In connexion with this plant are four oil-storage tanks of steel of 60 ft. diameter, 25 ft. high, and 1,760,000 gallons total capacity. The whole of the manufacturing and purifying plant at Nechells is now in course of duplication and well advanced, and will, when finished, complete the scheme of works as originally designed—viz., for 10 million cubic feet of gas per day, excluding water gas.

## *COMPETITIONS.*

SCHOOL, CHESTERGATE, STOCKPORT.—The designs of Messrs. Cheers & Smith, architects, Blackburn, have been selected for a new public elementary school to be erected at Chestergate, Stockport. The school provides accommodation for 950 children—viz., 300 infants, 250 mixed juniors, and 400 mixed seniors. A large swimming bath and cookery and manual instruction rooms form features of the building.

## BOOKS RECEIVED.

THE LAW RELATING TO SEWERS AND DRAINS. By Alexander Macmorran, K.C., and W. Addington Wills, Barrister-at-law. (Butterworth & Co., and Shaw & Sons.)

THE PROGRESS OF THE GERMAN WORKING CLASSES. By W. J. Ashley. (Longmans, Green, & Co. 1s. 6d.)

FIRST STAGE BUILDING CONSTRUCTION. By Brysson Cunningham, B.E. Second Edition; revised. (W. B. Clive.)

SKETCHES ON THE OLD ROAD THROUGH FRANCE TO FLORENCE. By H. Hallam Murray, H. W. Nevison, and M. Carmichael. (John Murray. 21s.)

HAMPSTEAD WELLS: A SHORT HISTORY OF THEIR USE AND DECLINE. By G. W. Potter. (Geo. Bell & Sons.)

# Correspondence.

### "ARCHITECTS' DRAWINGS."

SIR,—We are delighted to see your leading article in the current issue of the *Builder*, and we hope that the conclusion to which you have arrived will meet with the general support of the profession.

In the particular action referred to there may or may not be a good defence as the law now stands; but in any case, as the action is to be carried further it seems to us that, in the interests of the profession, every effort should be made to uphold the well recognised custom that, except in special cases, the drawings are the personal property of the architect. In order to assist the defence we are willing to contribute ten guineas each, provided that not less than eight other architects are willing to come forward with contributions of a like amount, so as to insure 100 guineas at least toward the costs of defence.

GEORGE HUBBARD, F.S.A., F.R.I.B.A.
ALFRED W. S. CROSS, F.R.I.B.A.

SIR,—Whether due to comparative poverty or to want of backbone, architects, as a class, have for a long time constituted a species of "Aunt Sally" for the benefit of the legal

profession; but, if the decision in the case of Gibbon *v.* Pease be not reversed on appeal, the future position of architects promises to be well-nigh contemptible—to be, in fact, merely that of "plan makers in ordinary" to their clients, to enable the latter, as untrained amateur builders, to comply with the requirements of building authorities, and, at the least possible expense to themselves, to obtain the services of a trained architect to assist them to carry out, without personal risk, their ideas of "architecture"!

Your able leading article in the last issue of the *Builder* so exactly and completely summarises the position that further words seem unnecessary; the one thing now needed being action upon the part of architects as a body. Such action must also be prompt and strongly supported if full advantage is to be taken of the fortuitous circumstance of a clear case upon which the issue may be explicitly stated and fought out. Surely it is in the interest of every architect to see that his position as a highly-trained adviser—and not a mere tool of his client—is explicitly stated and conceded. Consequently, whether or not the defendant in the case of Gibbon *v.* Pease or the "Board of Professional Defence" is or is not financially able to contest the point, the fogginess would more likely be cleared away from the eyes of the legal profession as to what an architect really is, if the matter received the support of the entire body of architects.

You, sir, have rendered signal service to architects by your most clear and instructive remarks. Will you add one more favour by opening a fund, through your columns, to enable the question to be taken to the Court of Appeal—and to the House of Lords if necessary—on behalf of architects as a body instead of one member thereof?

I have not the pleasure of Mr. Pease's acquaintance, and, therefore, my letter can be accepted as written with entire singleness of purpose.

I enclose a cheque for 5*l.* 5*s.* in case you are willing to open such a fund; but for the present I should prefer that my name should appear as

"A PROVINCIAL ARCHITECT."

*** We shall be quite prepared to take the action proposed by our correspondent should it become necessary. For the present, however, we have handed him back his cheque, with the intimation that we preferred to wait and see whether the Institute of Architects may yet be persuaded to recognise what we regard as its duty to the Profession.—ED.

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SIR,—We, as solicitors for the defendant in Gibbon *v.* Pease, have read with the greatest interest your leading article in last week's copy of the *Builder*, on the question which was raised by that case, and we ought to say that your remarks as to the desirability of the R.I.B.A. taking the matter up, entirely accord with our own views of the subject.

Unfortunately, however, they do not appear to accord with those of the Royal Institute Council, as will be seen from the enclosed letter, which was sent to all members of the Council of the Royal Institute, and in reply to which we received a letter from its Vice-President, a copy of which we enclose for your perusal.

As matters now stand an appeal is, of course, a great expense, and while the Surveyors' Institution has subscribed 100*l.* towards the expense of the trial, so far as it involved the delivery up of documents appertaining to their branch of the profession, the Royal Institute as a body has offered no assistance, pecuniary or otherwise, although several members of the Council have been markedly different in this respect; and, we are given to understand, did their best for us at the Council Meeting, before which the enclosed letter was laid.

You will also observe that our Mr. Daphne never had the opportunity which he has repeatedly asked for, to lay the matter before the Council of the Institute, and as a matter of fact (unless the enclosed letter from the Vice-President is to be taken as such) we have had no report from the Council at all as to what took place at the meeting before which our letter was laid. This being so, and inasmuch as our client, Mr. Pease, is by no means a man of wealth, and the point involved affects every architect in the United Kingdom and Ireland, we feel it is right that our letter to the Council of the R.I.B.A. should be laid as it stands before architects generally, through the medium of your columns, in order that they may, at any rate, have the opportunity of helping Mr. Pease to enforce the rights of the profession to which he has the honour to belong, and the burden of which ought clearly not to fall upon one man alone.

CHAS. ROBINSON & CO.

10, Norfolk-street, Strand, November 28.

*** The following is the letter addressed by Messrs. Robinson & Co. to the Members of the Council of the Institute of Architects. If we understand correctly, Messrs. Robinson had already addressed the Council formally on the subject, and had received no official reply and no intimation that their letter had even been considered by the Council; they therefore addressed the following circular to Members of the Council individually:—

"10, Norfolk-street, Strand, W.C.
November 17, 1904.

GIBBON *v.* PEASE.

DEAR SIR,—As you are no doubt already aware from the correspondence which, we are given to understand by your Secretary, has been laid before your Council, we are acting on behalf of Mr. C. E. Pease, who has been sued by the plaintiff, Mr. Gibbon, for the detinue of a number of documents, a list of which is *inter alia* as follows:—

All plans, drawings, and specifications prepared by the defendant for the purpose of the alterations and works carried out under his supervision, and in particular the drawings Nos. 1 to 5, and the specifications marked A, and the copies of the drawings returned by the contractors to the defendant referred to in the contract dated 21st October, 1902, and copies thereof, all estimates and tenders, etc., and copies thereof, all contracts made by plaintiff or defendant on his behalf and copies thereof, all bills of quantities and copies thereof, all letters and copies of letters in connexion with or relating to the buildings, plans, specifications or contracts, or any of them and all other plans, specifications, papers and writings, including copies thereof relating to the said alterations and works, or any of them.

We feel that, in the interests of the profession at large, the detailed circumstances should be laid before your Institute with a view to obtaining financial assistance for Mr. Pease in appealing from the decision given on the 15th inst. by Mr. Justice Ridley.

The facts of the case are as follows:—

Mr. Pease was acting both as architect and as quantity surveyor in the alteration of certain premises in Queen's-road, Bayswater, which the plaintiff desired converted into flats.

He was to act as architect on plans which he had previously prepared at a commission of 5 per cent. on the accepted tender, provided that the accepted tender was for less than the sum fixed by the building owner. He was also employed as quantity surveyor at the usual charge of 2½ per cent. The plaintiff, on completion of the work, demanded from Mr. Pease the whole of the documents referred to above (which, it will be noticed, were both those which would come into his possession as architect and also as quantity surveyor), and we should perhaps here mention that the Surveyors' Institution guaranteed up to 100*l.* Mr. Pease's costs of defending the action so far as such part of it as related to quantities was concerned, and called a meeting of their Council and sent a deputation of them to prove the custom of the quantity surveyor's profession at the trial.

What happened at the trial yesterday was this:—

The plaintiff feeling, no doubt, his position as claiming the dimensions, abstracts, and draft bills of quantities, was hopeless, gave up his claim as regards these, and he also gave up his claim to all the other documents above mentioned with the exception of the contract drawings and the specifications.

As regards the contract drawings and specifications, the judge refused to hear the expert evidence we had at hand as to custom, ruling that this contract was governed by the case of Ebdy *v.* McGowan, with which case you are, no doubt, familiar, and he accordingly gave judgment for the plaintiff in respect of the contract drawings and specifications. He, however, gave the defendant his costs of the issue regarding the papers prepared by the defendant in his capacity of quantity surveyor, and he gave leave to appeal the question as to the contract drawings and specifications, and stayed execution for three weeks, or if appeal entered within that time, then until the trial of the action.

The question of the appeal thus becomes a matter of vital importance to the profession as a whole, as, while this decision stands, an architect, working on the usual 5 per cent. commission for superintending building work to completion, will be forced to deliver up all his plans to the employer after he has completed the job.

We are advised that this species of contract which was the contract in this case is clearly distinguishable from that in Ebdy *v.* McGowan, and we are quite clear, as a matter of fact, that text-books quoting Ebdy *v.* McGowan have relied on the judgment in that case as reported, without looking at the facts upon which the judgment in question was based, and that the judgment itself was in terms limited to the facts of this particular case.

What happened in Ebdy *v.* McGowan is shortly as follows:—

A vicarage was to be built by the architect on the following express terms:—5 per cent. if the vicarage was completed, 3 per cent. if tenders obtained and work not commenced, 2½ per cent. if no tenders issued.

The building owner decided not to build at all, and consequently the 2½ per cent. arrangement applied, that is to say, the contract resolved itself into a special contract to buy plans at 2½ per cent. The contract was not, as we may term it, an unseverable one to *build a house* at 5 per cent. (as the one in our case is), as the building owner had the option to build or not to build, and further, the terms of the arrangement implied a special contract as to what was to be done if the plans were drawn and no tenders issued.

The architect accordingly *sent in a demand for his 2½ per cent. commission for the preparation of the plans*, but in subsequent correspondence he refused to deliver up the plans themselves even were he paid, and the building owner refused to pay unless he had the plans delivered up.

In the Court of first instance the architect succeeded in proving a custom that he had a right to keep the plans, although he was paid for them, and what the Court sitting in Bank decided on appeal was, that such a custom, even if proved, would be unreasonable, which seems perfectly natural and proper, as otherwise the building owner would not be getting what he actually bargained for, *i.e.*, the plans.

The distinctions between our case and this are, among others, as follows:—

In our case plans were prepared before, as a matter of fact, any contract was made between the plaintiff and defendant at all, and were only accepted on the basis of the tender coming in under 3,500*l.* That is to say, our contract was, "if you can get the building done on the plans you have shown me for 3,500*l.*, or under, I will give you 5 per cent. on the accepted tender." Mr. Pease could have claimed nothing whatever for his preparation of the plans had they not been

(1) Approved by Mr. Gibbon after having been drawn, *and*

(2) An estimate having come in at less than the given price, *and*

(3) The building having been completed in accordance with the plans;

or, in other words, that our contract was not a contract to *prepare plans* at all, but to carry out alterations, and we say that the plans were merely prepared by us for our convenience in carrying out the work, and no obligation existed to prepare plans at all, and we should particularly point out that, had the plaintiff refused to complete the work, we could have claimed nothing whatever for the work involved in the preparation of the plans, but must have sued for the whole of the amount due under the contract, and recovered either that or nothing at all.

The position we take up is as follows:—

Where the retainer of an architect and his employment is to *superintend* work, and the preparation of plans is merely ancillary to the supervision of the work, or where the architect is instructed in the first instance to prepare plans, and afterwards to superintend the carrying out of the work thereunder, the architect keeps the plans, not only by custom, but because on completion of the work the building owner has all he bargains for.

Where the employment of the architect is confined to the preparation of plans without reference to the carrying out of any work, then the employer, by special contract, keeps the plans, but there is no recognised custom as to the employment of an architect for this latter purpose (the architect's duty being primarily to superintend the building of premises, and not to prepare plans), and therefore, in every case where the employer keeps the plans, he keeps them in pursuance of a special contract.

Now, if this contention be correct there should be no distinction between the employment of an architect and that of a quantity surveyor, as laid down in the case of the School Board for London *v.* Northcroft, as regards delivery up of material prepared for the carrying out of his contract.

This case was an action in which the School Board sought to recover from Mr. Northcroft, a quantity surveyor, certain bills of quantities, dimensions, and abstracts made by the defendant, and relating to certain

property belonging to the London School Board; and which action the School Board lost, although, as a matter of fact, an error of no less than 677 cubic yds. was made by the quantity surveyor, and the School Board required dimensions, abstracts, etc., for the purposes of checking these off. The judge, Mr. Justice A. L. Smith, in his judgment, made the following remarks:—

'The defendants deny that the plaintiffs are to have the documents in question, as they allege such documents were prepared by them solely for the purpose of making up their bills of quantities for the contractors. An action of detinue will not lie, for how can the defendant's private memoranda be the property of the plaintiffs; the ink, papers, and brains used in making them are all the defendant's, and they are right in law in refusing to give them up.'

Now the ultimate object of the *quantity surveyor*, and the purpose for which he is employed, is to make and deliver to the building owner a bill of quantities, and all the machinery whereby he arrives at that result are held to be his own property.

The ultimate object of an *architect* is to supervise the construction of, and deliver to a building owner, a completed house, and the materials whereby he arrives at that result, *e.g.*, his plans, specifications, and correspondence, etc., should, we think, be held to be his property also, by analogy with the above case.

Quite apart from this we ought to call your attention to the fact that the Court of Appeal is at liberty to over-rule Ebdy *v.* McGowan altogether, as Ebdy *v.* McGowan was decided by the Court in Bank merely, *or* they could say that in Ebdy *v.* McGowan there was, on the facts, a special contract, whereas, in our case there was not, and send the case back to the Court of King's Bench for trial as to the existence of a custom.

It is, of course, difficult to place the whole of the circumstances before you in a letter, and our Mr. Daphne would be pleased to attend before your Council, as he has already offered to do, and put the matter before you in detail, which we should be very much obliged if you would give him the opportunity of doing, as there are many arguments in favour of the architect, which, if included in this letter, would make it altogether too lengthy for convenient digestion.

For convenience of reference the following is a list of the correspondence between Mr. Pease and ourselves, and Mr. Locke, and we shall be glad if you will see that it is all laid before your Council at their next meeting:—

Letters, Mr. C. E. Pease to your Secretary, January 9, 1904, August 4, 1904, September 7, 1904, October 20, 1904.

Letters, C. Robinson & Co. to your Secretary, January 12, 1904, January 14, 1904, February 15, 1904, and enclosures.

Letters, your Secretary to Mr. C. E. Pease, January 11, 1904, August 10, 1904, September 8, 1904, October 15, 1904, October 21, 1904.

Letters, your Secretary to C. Robinson & Co., January 13, 1904, January 15, 1904, February 19, 1904, March 1, 1904.

Yours faithfully,

CHAS. ROBINSON & CO.

To a Member of the Council of the Royal Institute of British Architects."

## FIRE-RESISTING FLOORS.

SIR,—In your advertisement columns of last week, my name, honorary function, and part of a sentence from some writings of mine regarding the Baltimore fire, are utilised by Messrs. Mark Fawcett & Co. in a manner that would make it appear that I endorsed the system of floor construction with which that firm is specially associated.

The extract is quite correct as far as it goes, but it should be read in conjunction with my observations on the Baltimore fire generally, for, if standing alone, and appearing below an illustration of Messrs. Mark Fawcett & Co.'s floor, a very different impression is obtained from what I intended to convey in my remarks on that conflagration.

EDWIN O. SACHS.

## THE JOINERY TRADE.

SIR,—"J. C. W." says he can make joiner's work in "England" quite as cheaply as the foreign joinery. This is not the experience of the majority of people, or "Laxton" would not put the price of foreign-made doors, sashes, and frames at such a much lower figure than the English make.

I beg to say I have a well-equipped joiner's shop, with modern machinery, and have often tried, but without success, to make doors, window sashes, and frames at less cost than the foreign make, and of which we see such large quantities brought into and sold in London, and used in the various building estates now being developed in the suburbs of London.

My first trouble is the prohibitive local rates; and, as every manufacturer knows, machinery is assessed "right up to the hilt"; this presses very heavily.

Then we have the Factory Act, with the inspector's requirements as to fire escape ladders, staircases, sanitary arrangements, etc., all of which cost a great deal of money.

Of course, the rates of the London joiner's wages—namely, 10½d. per hour—is much higher than that of the foreigner, and also of many of our own provincial towns, who pay 8d., and some less.

But in the case of the foreigner, he pays none of our rates or Imperial taxes, and he does not come under our Factory Act, therefore, the remedy I would suggest is, that some toll or tax be put on all foreign-made joinery, as an equalisation for the rates and taxes paid by us, and which would enable English employers to employ English joiners.

A LONDON BUILDER.

## COURT OF COMMON COUNCIL.

THE usual fortnightly Court of Common Council was held at the Guildhall on Thursday last week.

*Artizans' Dwellings, Hounsditch.*—The Improvements and Finance Committee reported that certain repairs, painting, pointing, etc., were necessary at the artizans' dwellings in Stoney-lane, Hounsditch. It was agreed that the works, estimated to cost some 2,000*l.*, should be included in next year's estimates.

*Street Improvements.*—On the recommendation of the Streets Committee it was agreed to carry out various minor street improvements. It was also agreed to withdraw the stipulation as to the working at night only in the case of certain street works in Wormwood-street, London Wall, and Basinghall-street, in connexion with the General Post Office. An offer of the Metropolitan Drinking Fountain and Cattle Trough Association to provide an ornament at drinking fountain, to be fixed round the base of the lamp column over the underground convenience at St. Martin's-le-Grand, was accepted. It was ordered that an expenditure of 888*l.* 10s. should be incurred in the substitution of incandescent gas burners for the old lamps, and the provision of 115 additional lamps in various side streets and courts in the City. Permission was granted to the City and South London Railway Company to fix a clock outside their Bank Station at the corner of Lombard-street and King William-street.

*Hairdressers' Saloons: Regulations.*—The Sanitary Committee submitted a report from the Medical Officer of Health on the conduct of hairdressers' saloons. Regulations drawn up by that officer were approved. The same Committee submitted the revised by-laws with respect to houses let in lodgings, and these also were adopted and received the City Seal.

*London Squares and Enclosures Bill.*—A letter from the Clerk to the London County Council transmitting a copy of the first draft clauses of this Bill was referred to three Committees—The City Lands, Streets, and Bridge House Estates Committee.

*Cattle Market, Deptford: Lighting.*—On the recommendation of the Cattle Markets Committee, it was agreed to renew the contract with the Kitson Lighting Company of Great Britain, Ltd. (now merged in The United Kingdom Lighting Trust, Ltd.), for leasing installation of oil incandescent lamps for the roadways and open areas of the Foreign Cattle Market, Deptford, for one year, at the reduced cost of 600*l.*

## METROPOLITAN ASYLUMS BOARD.

THE fortnightly meeting of the Managers of the Metropolitan Asylums District was held at the offices of the Board, Victoria Embankment, W.C., on Saturday last, Mr. Scovell presiding.

*Joyce-green Hospital: Internal Painting.*—Among the correspondence received was a letter from the Local Government Board asking to be furnished with more definite information relating to the proposed internal painting work at the Joyce-green Hospital, and why so large an expenditure as 7,000*l.* is necessary at this stage. It was agreed to inform the Local Government Board that the estimate was for the whole of the interior painting, and that the amount was not considered excessive.

*North-Eastern and North-Western Hospitals.*—A letter was received from the Local Government Board authorising the erection of cottages at these hospitals for the accommodation of the engineers at a cost of 1,120*l.*

*Rochester House Asylum.*—The Asylums Committee recommended, and it was agreed, that unconditional consent be given to a proposed rearrangement of the boundary line between the Rochester House estate and the property of the Ealing Borough Council. The Managers are terminating their tenancy of Rochester House at Midsummer next.

*The Downs School.*—The Children's Committee reported having decided on carrying out certain improvements to the fire-extinguishing appliances at this school at a cost of 110*l.* The ten outside hydrants will be replaced by modern hydrants with outlets to suit the hose couplings used by the local fire brigade.

*Park Hospital.*—It was referred to the Works Committee to take the necessary steps for the erection of six permanent stagings in the casing of the well at the Park Hospital.

*Belmont Asylum.*—The Works Committee reported that since the last meeting of the Board they had sanctioned certain further variations on Messrs. Enness Brothers' contract, amounting in value to 138*l.* 10s. Mr. W. Crooks, M.P., asked the Chairman of the Works Committee if he could give him any information with regard to a letter from Messrs. Enness's on the question of the rates of wages paid to the workmen at this asylum. It appeared that part of the asylum was outside the twelve-mile radius from Charing Cross, and the contractors had "measured the milestones," which he considered was mean. Mr. Helby, in reply, said that Messrs. Enness Brothers had decided to take no further action in the matter, but it had been agreed by the Committee that, in all future contracts, the whole of the asylum should be included in the twelve-mile area.

*North-Western Hospital.*—The Engineer-in-Chief reported the completion of the fire-resisting works at this hospital. The works were carried out by Mr. W. Harbrow at a cost of 2,339*l.* 16s., being 6*l.* 16s. in excess of the contract sum.

*Minor Works and Repairs, Mode of Carrying Out.*—On the recommendation of the Works Committee it was agreed:—"That in the event of a committee deciding that any work or repair (the value of which is estimated not to exceed 100*l.*) is necessary and should be dealt with by the Works Committee, it shall be the duty of the Works Committee to determine in what manner and to what extent such work or repair shall be carried out."

*South-Eastern Hospital.*—The Works Committee further reported that they had authorised the provision of 300 Gilmour (Canadian) hospital doors in the eight pavilions, two isolation blocks, and the receiving and discharge wards, at an extra cost of about 240*l.*, in place of the internal doors originally specified for those buildings.

## OBITUARY.

MR. HENRY S. WHALLEY.—We have to announce the death, which took place on the 25th ult., of Mr. Henry S. Whalley, F.S.I., 3, Hunter-street, Chester. Deceased was a son of the late Mr. Jno. Whalley, surveyor and land valuer, to whose business he succeeded. He was frequently employed as an expert in arbitration cases, land disputes, and in connexion with the promotion of railway and other Bills in Parliament.

## GENERAL BUILDING NEWS.

CHURCH, CLYDACH.—At Clydach-on-Tawe, Swansea Valley, on Thursday last week, the memorial-stone was laid of the new Church of St. Mary. The church is situate on the corner of the main road. The plan consists of a nave, 69 ft. long by 28 ft. 6 in. wide; north aisle, 66 ft. long by 12 ft. wide. The south aisle, terminating in a west tower, 18 ft. square, is 48 ft. long by 12 ft. wide. The chancel is 36 ft. long by 22 ft. wide, with an organ chamber and choir vestry on the south side and clergy vestry on the north side. The length of church inside, from the west wall of nave to east wall of the chancel, is 105 ft. An arch, rising to a height of 34 ft. to the apex, divides the nave from the chancel, and the roof of the chancel is barrel shaped, divided into panels by moulded ribs. There is to be a sedilia in the chancel, the work of Mr. Clarke, sculptor, of Llandaff, in whose studio the rest of the carved work will be done. The main entrance to the church is from the south side of the tower, and the tower will rise to a height of 100 ft. to the turret. A chiming clock, with illuminated faces on three sides of the tower, will be placed in it at a height of 65 ft. from the road level. The arches to nave arcades are carried on columns, alternately circular and octagonal on plan, with bands of red

Forest of Dean stone. The arcades are surmounted by three-light traceried windows, with arches carried on small columns. The nave roof is open to the apex, and is 49 ft. high. The principals spring from circular shafts with moulded caps and bases. All the timbers are of pitch-pine, and will be left clean from the plane. The chancel is lighted with a five-light traceried window in two orders of mouldings. The west window is a three-light window, flanked by a single light on each side. The aisle windows are two-light, each having different tracery in the heads. The church will be seated with benches throughout for 500 adults, and the choir stalls executed in Austrian oak. The chancel steps are to be of white Sicilian marble, and the pavement of chancel and passages of black-and-white marble in large squares. The system of heating adopted is Grundy's warm air apparatus. The walls are being built with grey native stone, with box ground stone dressings, and the roofs are to be covered with green Tyrch slates. The church, when completed, will cost 10,000*l*. The contractors are Messrs. Bennett Brothers, of Swansea. Mr. Bruce Vaughan, of Cardiff, is the architect.

CHURCH RESTORATION, NEWTON ABBOT.—Wolborough Church, Newton Abbot, was re-opened by the Bishop of Exeter on the 17th ult. after the restoration of the roof by the feoffees. The whole of the old slating, plaster ceiling, and roof timbers have been removed, and an oak roof substituted. The principal trusses, purlins, and horizontal and vertical ribs are moulded with carved oak bosses at the intersections, and the former plaster barrelled ceiling has been replaced by a ceiling of oak battens in narrow widths. The wall plates in the nave and aisles are of moulded oak, but in the chancel they are carved in addition. The central bosses in the chancel roof are carved, representing the emblems of the Passion. The rafters of the roofs are also of oak, boarded on the outer face with red deal boarding, which is covered with felt, on which battens are laid, while the outer covering is of slate with plain ridge tiles. An alteration has been made in the form of the gables at the western ends of the aisles, hitherto joined squarely to the tower. The inner sides of the gables now correspond with the outer sides, with Bath stone copings, and a Bath stone cross and base fixed on the apex of each, to correspond with the gables at the ends of the chancel and south aisle. A similar cross has also been fixed on the apex of the gable at the eastern end of the north aisle. The interior of the walls has been cleaned down and coloured a light stone colour, and the Beer stone columns between the nave and aisles and the stone-work of the windows have also been cleaned down, while the seats have been cleaned off and varnished. The ventilation of the church has been improved, ventilators being provided in the cells of the windows for the admission of fresh air, while the foul air is extracted by means of adjustable exhaust under-roof ventilators. The work, which has cost about 1,300*l*., has been carried out from the designs of Messrs. Powell, Sons, & Locke, architects, of Newton Abbot.

CHURCH RESTORATION, CLAUGHTON, LANCASHIRE.—The Church of St. Chad, at Claughton, which has recently been enlarged and repaired, was reopened on the 9th ult. by the Bishop of Manchester. The work was commenced six months ago, and the interior has been entirely renovated from designs by Messrs. Austin & Paley, architects, of Lancashire. The total cost is 900*l*.

CHURCH FOR SEAMEN AT THE VICTORIA DOCKS.—On the 9th inst. the Bishop of St. Albans will dedicate the new church of the Missions to Seamen at the Victoria Docks. The building has been designed by the Rev. Edmund Sinker, and the work has been carried out by Mr. Edward Beasley, builder.

ROMAN CATHOLIC CHURCH, SHEFFIELD.—The foundation-stone of a new Roman Catholic church was laid recently on a site just below Banner Cross, on Ecclesall-road. St. William's, as the new church will be called, will accommodate 100 worshippers, and will be of brick, with stone facings. Mr. C. M. Hadfield is the architect.

WESLEYAN METHODIST CHURCH, HANWELL.—The opening of the new Wesleyan church at Hanwell took place a short time ago. The building stands on a site about 450 ft. deep by 90 ft. wide, and has been erected at a total cost of 8,400*l*. Accommodation has been provided for 600 persons on the ground floor, besides other accommodation in the galleries, while the transepts will be used for school purposes, and will seat 500 scholars. Messrs. Gordon & Gunton were the architects, the contractor being Mr. Charles Brightman, of Walford.

RENOVATION OF WESLEYAN CHAPEL, CRANMOOR.—The improvements to this chapel have now been completed, and the building was re-opened on the 26th ult. The walls have been partly rebuilt, and the interior has been re-seated; a new entrance has been made, a new roof has been put on, and a new floor laid, the entire work being carried out according to plans prepared by Mr. R. M. Loxley, of Sheffield.

CONGREGATIONAL SCHOOLROOM, LEDBURY.—A new schoolroom was recently opened at Ledbury in connexion with the Congregational church in that town. The building is connected with the chapel by a short corridor. It is built of corrugated iron, lined with match-board, which is stained and varnished, and will seat 200, being 40 ft. by 20 ft. The windows have Gothic heads and the glass is fluted. Gas pendants hung from the roof provide the artificial lighting. The seats have reversible backs, and there is a portable platform. The frame of the building has been so constructed that it can be taken down and re-erected elsewhere. The exterior in Church-street is fenced with dwarf walls, surmounted by wrought-iron railings. The architect was Mr. G. Stephens, of Ledbury, the contractors being Messrs. F. Smith & Co., of Stratford, London, E.

DAIRY PREMISES, ABERDEEN.—A new dairy has been opened in Whitehall-road, Aberdeen. At the front of the buildings a sale shop, the walls of which are lined with white tiles, has been fitted up. Stables, sheds, etc., have also been erected in connexion with the establishment. The whole building is heated with steam radiators. The architects were Messrs. Walker & Duncan, Aberdeen.

PRESBYTERIAN HALL, NEWCASTLE.—In connexion with St. George's Presbyterian Church, in this city, the foundation-stone was laid, on the 15th ult., of a new hall in Jesmond-road. The building will seat 450, and the total cost will be about 2,500*l*. Mr. R. Burns Dick was the architect, and Mr. S. F. Davidson was the contractor for the work.

EXTENSION OF BUSINESS PREMISES, ABERDEEN.—The premises of Mr. J. W. Reid, in Crown-street, Aberdeen, have recently been enlarged and improved. The work has been carried out from the plans of Mr. R. G. Wilson, architect, by the following contractors:—Mason work, Mr. David Weir; carpenter, Messrs. R. & J. Reid; plumber, Mr. J. Campbell; plasterer, Messrs. J. Bannochie & Sons; slater, Messrs. J. & A. Milne; painter, Mr. E. Copland; lift, Messrs. Claud Hamilton, Ltd.; and electric lighting, Messrs. Blaikie & Sons.

DALZIEL NEW POORHOUSE.—The hospital and receiving blocks of the Dalziel new poorhouse at Motherwell were opened a short time since. The buildings have been erected by the Dalziel Parish Council at a cost of about 14,000*l*., and they are situated on a site at Airbles, overlooking the Clyde. The architect is Mr. Alexander Cullen, Motherwell.

NEW PARISH ROOM, ST. ETHELDRED, NORWICH.—A new parish room for the parishes of St. Etheldred and St. Peter, Southgate, Norwich, was opened recently by the Lord Bishop of the Diocese. The room stands upon the site of the ancient Hildebrond's Hospital; it was afterwards occupied by what was known as Ivy Hall; and, lastly, the site was encumbered by a number of old cottages. The building is of red brick, with green slate roof. The interior apartment, 55 ft. long by 21 ft. in width, is lighted by side and end windows, and the roof is of polished pitch-pine. The floor is boarded. The architect was Mr. C. Clowes, and the builder Mr. G. Greengrass.

BRADFORD TOWN HALL EXTENSION.—The Town Hall Extension Committee have decided to put in hand at once the work of excavation for the extension of the Bradford Town Hall. The working drawings are at present in the hands of the quantity surveyors, and it is expected that in about five weeks the contracts for the whole work may be considered. It has been decided that the Plenum system of ventilation shall be adopted for the new addition to the town hall.

DRILL HALL, ELGIN.—New headquarters are to be erected for the 3rd V.B. Seaforth Highlanders, at Elgin. Mr. W. C. Reid, Elgin, is the architect. The new headquarters will consist of an orderly-room and offices, sergeant-major's quarters, drill hall, gymnasium, armouries, stores, etc. The probable cost will about 3,200*l*.

NEW HALL, ARMAGH.—The new hall of the Irish National Foresters, at Armagh, was recently opened. The building has been erected from the plans of Mr. J. J. M'Dermott.

PROPOSED INSTITUTE, PENARTH.—A new church institute is to be erected on a site in Albert-place, Penarth. Plans have been prepared by Mr. H. Snell, architect, and the cost is estimated at about 3,000*l*.

MEMORIAL HALL, PLYMOUTH.—The Pitts' Memorial Hall, in Gibbon-street, Plymouth, was opened on the 23rd ult. Mr. Alton Bazeley, architect, designed the building.

## *APPOINTMENTS.*

PATENT OFFICE, CALCUTTA.—Mr. Henry George Graves has just quitted H.M.'s Patent Office, where he was an examiner of patents for mining and metallurgy, to take up the appointment of Comptroller of the Patent Office in Calcutta. Mr. Graves received his training in the Royal College of Science and the Royal School of Mines, 1881-5, where he gained the De la Beche medal for mining, and an Associateship in mining and metallurgy. As a member of the Iron and Steel Institute he, for some years past, compiled technical abstracts and papers for the journal of that Institute, and took a leading part in the conduct of their annual meetings.

## *MISCELLANEOUS.*

MUNICIPAL COUNCILS AND ARCHITECTURAL WORKS.—Committees of a number of the Metropolitan Borough Councils have now under consideration a letter from the Secretary to the Royal Institute of British Architects enclosing copy of a memorial from that and other architectural bodies urging:—(*a*) That architectural work be not placed in the hands of engineers or surveyors; (*b*) that where it is deemed desirable for architectural work to be carried out by a county or municipal official, such official shall be required to have passed the qualifying examinations of the Royal Institute of British Architects; and (*c*) that the work of an official architect be restricted to structures of secondary importance, and that all buildings of a monumental character be entrusted to independent architects to be selected in such a way as may seem best to the local authority. Final decisions upon the subject may not be expected for one or two weeks, or even more.

DRAINAGE PLANS.—On Saturday last week the Public Health Committee of Camberwell Borough Council reported the receipt of a letter from the London County Council asking the Borough Council's views on a communication sent to the Spring-gardens authority from the Royal Institute of British Architects expressing the view that compliance with the by-laws respecting the deposit of plans for drainage work involves great and unnecessary expense, and suggesting modification of the by-laws so that they shall only require the submission of a block plan and a written description of the pipes and apparatus. In April last a similar application was received by the Camberwell Council from the Royal Institute of British Architects, and was referred to the Borough Engineer, who reported that he only insisted upon sufficient drawings being deposited to enable the Committee to consider whether the whole of the suggested drainage was in accordance with the several Acts of Parliament, and that he considered that this should be insisted upon, more especially as owners were now taking every advantage in claiming drains as sewers in cases where, in the past, the late vestries had not insisted upon the deposition of these full detailed plans. This report of the Borough Engineer was adopted by the Council. The Committee now resolved to inform the London County Council of the foregoing facts, and the decision of the Borough Council thereon.—On Monday the General Purposes Committee of Lewisham Borough Council reported being in receipt of a similar letter and request from the London County Council. The Borough Surveyor, the Committee's report went on to say, had reported as to the unnecessary expense involved in the preparation of the plans, and was of opinion that the suggestions of the Royal Institute of British Architects might be agreed to, providing that the block plan clearly indicates the position in a street of the intended building, either by making a key plan from the 25-in. ordnance sheet, or by indicating the distance of the intended buildings from the nearest street corner. The Committee concurred in these views, and had directed that the London County Council be so informed in reply to their letter.

THE SANITARY INSTITUTE.—At an examination in Practical Sanitary Science, held in Manchester, November 18 and 19, two candidates presented themselves, one of whom certificated.

DEAN FARRAR MEMORIAL.—On November 21 Lord Peel unveiled the memorial which has been erected in the east, or "House of Commons," porch of the Church of St. Margaret, Westminster, to the late Dean Farrar, who was rector of the parish, 1876-1895. The memorial, designed by Mr. W. D. Caröe, consists of a bronze medallion in a setting of carved stone, the bust being modelled by Mr. N. Hitch. The porch itself was erected in 1891, after designs by J. L. Pearson, R.A., by

Lady Sherbrooke, in memory of her husband, the statesman.

RURAL BY-LAWS.—At the recent meeting of the Chailey Rural District Council, at which it was unanimously decided to take proceedings against Sir William Grantham for building on his estate at Barcombe, in contravention of the by-laws, in the course of the discussion the Council's attitude in the matter was explained by the Rev. A. C. Lucey, the rector of Westmeston, who said the real cause of the dispute was simply this:—Sir William Grantham, before the Local Government Board, had twisted words used by their surveyor and other persons with regard to their not understanding the plans he had submitted. He had taken upon himself the duties of architect and had drawn his own plans, which were not intelligible to them, and they wrote to him in a courteous manner and asked him to produce plans which were intelligible. The whole dispute lay within very small compass:—"We do not understand your plans; will you please explain them?" This, said the rector, ought to be thoroughly understood by the public, because they were showing a tendency to judge the Council before they had heard the Council's side, and local bodies throughout the whole of England should clearly understand what their position was. Their by-laws were the simplest by-laws which could possibly be carried out, while the policy of the Council was in the direction of building cottages in the country districts. Sir William Grantham had remarked sarcastically that two clergymen were on the Council. Few persons knew better than the clergy from personal experience the need of increased cottage accommodation in the country. One of the two clergymen referred to was the owner of considerably more property than Sir William Grantham, and he had shown that he was a great deal better able to manage his property and understood cottage accommodation better than Sir William Grantham. There were grave moral questions involved in this matter, and the Council had adopted a set of by-laws in order that increased accommodation might be given at as cheap a rate as it was possible to build, and at the same time to safeguard the interests of the working classes. If there were representatives of the working classes on county councils he was perfectly certain that they would stand shoulder to shoulder with the Council against Sir William Grantham.

ROYAL SANITARY INSTITUTE.—The Royal Sanitary Institute held a provincial sessional meeting in the Exchange Hall, Nottingham, on Saturday last. After a civic welcome had been accorded the members, the chairman of the Council of the Institute, Mr. W. Whittaker, B.A., F.R.S., F.G.S., took the chair, and was supported by the Mayor (Alderman J. Bright), and the Sheriff (Dr. T. J. Dabell). Dr. P. Brobbyer, the Medical Officer of Health for Nottingham, read a paper on "Some Present-day Aspects of Conservancy Systems." He remarked that the dry system which obtained in Nottingham was recognised as obsolete, and the gathering of the members of the Institute would be helpful to the local administrators in their effort to convince the public that the system was out of date and altogether insanitary. A lengthy discussion ensued. The Sheriff of Nottingham spoke of the ravaging effects of infantile diarrhœa, which were always more noticeable in districts where the dry system existed. Dr. H. Handford, the Medical Officer of Health to the Notts County Council, thought that improvements should first be made in regard to elementary schools. Dr. J. R. Kaye (Medical Officer of Health, West Riding District), Mr. H. Gilbert Whyatt (Grimsby Borough Engineer), Mr. A. J. Martin (London), Miss Evans, Dr. J. Robertson (Medical Officer of Health, Birmingham), and others, joined in the debate. The members were subsequently invited by the Health Committee to luncheon, and afterwards visited the Bacteriological and Chemical Laboratory, destructor works, and sanitary wharves, and the works of Messrs. Goddard, Massey, & Warner, engineers.

AN OLD BRITISH ROAD.—Mr. Hilaire Belloc delivered a lecture on Saturday afternoon last week in the Botanical Theatre at University College, Gower-street, on "An Old British Road." He said that the subject on which he intended to speak was the old road from Winchester to Canterbury, which he had explored about a year ago, and his object was to show what interest could attach to a subject of this kind. Though the idea was difficult for the modern mind to seize when all our principal thoroughfares ran from north to south, yet it was the case that the earliest of our important roads ran from east to west, that was to say, from Dover, which was the natural port of entry into this island, to Stonehenge, which, in primitive times, was the centre of its political and religious life, and from this there was a branch going to Winchester. Up to the Reformation the South of England contained a very large proportion of the wealth of the country. Winchester was its capital, and remained so right up to the XIIth century. Henry II. was probably the first monarch who called London its chief town. One of the causes which contributed to the preservation of the road from Canterbury to Winchester was that a great part of it lay on chalk. He believed that of its total length of 121 miles, about 55 per cent. was on chalk. Another reason was the pilgrimage to the shrine of St. Thomas à Becket, at Canterbury. The murder of St. Thomas took place just before Winchester had lost its old importance. The old road was undoubtedly revived by the pilgrimage, and remained a kind of sacred way until the Reformation. It was an interesting fact that, when Henry VIII. was going to the field of the "Cloth of Gold," he did not go by Rochester, as he might have done, but went instead by the old way to Canterbury. That was, however, the last of the great progresses along the road. It was an excellent instance of the irony of history that the effect of the turnpike system, by inducing people to make use of roads in which there were no turnpikes, was to tend to the preservation of the old roads, which had been on the point of disappearing. About 60 per cent. of the old road from Winchester to Canterbury was well known. Of the remainder about 20 per cent. was guessed at, more or less accurately. In tracing it they were guided by the indications afforded by the road in places now known, by the soils which were chosen, by the trees which grew along it, and by the names of places along the route. He had been able in this way to reconstruct, he might say, the whole way, with the exception of some small gaps. He admitted that as regarded twenty miles it was only a hypothesis, and close on two miles he was unable to find. Of all the important roads of antiquity this one was nearest to London, a great section of it running close to the capital.

MEMORIAL, OXFORD.—A bust of the late Marquis of Salisbury was recently unveiled by Lord Rosebery in the Debating Hall of the Oxford Union Society. The bust, which is the work of Mr. George Frampton, R.A., has been executed in white marble, mounted on a black pedestal about 5 ft. in height.

PROPOSED ENLARGEMENT OF THE WORKHOUSE, COLNBROOK.—At a special meeting of the Board of Guardians held recently a report was presented by Mr. Brook Kitchen, Architect to the Local Government Board, dealing with the present condition of Colnbrook Workhouse, and suggesting various additions and improvements.

WAR MEMORIAL, OMAGH.—On the 25th ult. the Duchess of Abercorn unveiled the memorial erected in Omagh to the officers and men of the Royal Inniskilling Fusiliers who were killed in the Boer war. The monument consists of bronze figures of Fame, War, and Death, standing upon a granite base, and has been erected from the designs of Mr. Sydney March, Farnborough, which were accepted in competition. The execution of the work was carried out by Messrs. Elkington & Co., of London.

ASYLUM EXTENSION, BARMING, KENT.—Colonel Hepper, D.S.O., an Inspector of the Local Government Board, recently held an inquiry at Barming Asylum respecting the application to borrow 63,250*l.* for the purpose of enlarging and improving this institution. It is proposed to erect two new blocks, one for males and the other for females, to accommodate some 200 patients. The proposed buildings would have corridors to connect them with the existing structure, and there would also be an addition of two bays. In accordance with the wish of the Lunacy Commissioners there would also be a new isolation hospital erected. There will also be a system of water mains, with pumps and hydrants, in case of fire. Mr. J. W. Jennings, the Asylum Architect, mentioned, in putting in the plans and specifications, that they had been approved by the Commissioners. This closed the inquiry.

WAR MEMORIAL, NORWICH.—On the 17th ult. the Norfolk War Memorial, which has been placed on a site to the north-east of the Shire Hall, was unveiled at Norwich. The design represents a figure of Peace, with outstretched wings, alighting on a globe and sheathing a sword. This is 9 ft. high, and worked in bronze. It symbolises the coming of peace after victory. The head is crowned with laurel leaves, and in the left hand is an olive branch. The figure rests on a substructure about 30 ft. high, the lower portion of which is built of Aberdeen granite. Four pillars rise from this base, and these and the remainder of the masonry of the column are of Portland stone. On each of the four faces of the column is sunk a tablet of gun-metal, upon which the names of the Norfolk soldiers are inscribed. The total height of the column is 40 ft., and its cost 1,500*l.* Messrs. George & Fairfax Wade designed the monument.

CARPENTERS' COMPANY.—At an examination in Sanitary Building Construction, held at the Carpenters' Hall last week, bronze medals were awarded to the following candidates:—Wm. C. Portman, John D. Manners, Thos. C. S. Hall, and E. E. J. Lawrence. Certificates were awarded to Hy. Merryfield, Wm. F. Lombard, E. E. Barks, Wm. E. Sheppard, Hy. Crossley, Wm. Hughes, F. Lambert, E. G. Walker and Fredk. C. Chant (equal), and Robt. H. Griffith.

## Legal.

### ACTION BY BUILDING OWNER AGAINST ARCHITECT—HEAVY CLAIM FOR DAMAGES FOR ALLEGED NEGLIGENCE.

IN the King's Bench Division on the 29th ult. the Lord Chief Justice, sitting without a jury, concluded the hearing of the case of Hodgson *v.* Waugh, after a seven-days' trial.

In this case the plaintiff, Mr. George Herbert Hodgson, a loom maker, of Baildon, near Bradford, Yorkshire, sued the defendant, Mr. John Waugh, an architect and civil engineer practising in Bradford, to recover damages laid at over £10,000 for alleged negligent breach of duty as architect, and also damages for alleged breach of contract. The defendant denied the alleged breach of duty and contract, and counter-claimed for 1,203*l.* for fees for work done and services rendered.

Mr. Lush, K.C., Mr. Clavell Salter, K.C., and Mr. Compston appeared for the plaintiff, and Mr. Tindal Atkinson, K.C., and Mr. F. P. M. Schiller for the defendant.

It appeared from the opening statement of Mr. Lush that about the middle of the year 1900 Mr. Hodgson was looking out for a property to buy, and ascertained that there was a large estate in Hertfordshire known as Heaton Manor, situated half-way between Hitchin and Luton, for sale. It consisted of a large hall and some 1,600 acres of land, and there were also residences known as "Summerville," Hexton Lodge, Pegsdon Lodge, and Meg Cottages. The plaintiff found that a certain amount of alteration and repair was necessary, the property having been in the hands of mortgagees for some years, and, being acquainted with the defendant, he engaged him to do the work. At the time plaintiff was in ill-health, and was about to travel abroad, and his case was that, during his absence, the defendant caused work to be done and buildings to be erected which were not in accordance with the plans and estimates he had prepared, and which had been submitted to and approved by the plaintiff. The plaintiff's case in regard to "Summerville" was that the house was rebuilt in such a way as to need a rental of 75*l.* a year to repay the outlay, whereas the defendant had been informed that the plaintiff had a tenant at 50*l.* a year, who would not pay more. As a result, the plaintiff lost the tenant. The learned counsel also enumerated a number of items of expenditure, of which the plaintiff complained, with regard to buildings, the cleaning of a lake, and work upon a mill stream, a trout stream, and ponds.

The plaintiff, examined by Mr. Compston, said he agreed to buy the Hexton Estate, in Hertfordshire, in the year 1900. For twenty years previously it had been in the hands of mortgagees, and the buildings upon it were in a bad state of repair. In August, 1900, he sent for the defendant with regard to the alterations he desired to make. On August 10 defendant accompanied witness and Mrs. Hodgson to the estate. They went over the hall and Hexton Lodge, and discussed what was necessary to be done. They also discussed as to the stables, conservatories, greenhouses, and kitchen garden. It was left that the defendant should send him some plans of the hall, which were found to be in existence. On September 13 he received a letter from the defendant headed, "Report and Estimate." First of all it dealt with the stables, stating that the total cost of the stables would be about 2,865*l.* Then, as to the hall, it ran: "I have gone into this, and, roughly, it means this: The expenditure as per plan amended No. 2 would be about 4,500*l.*, whilst that of the set of plans No. 3 would be 6,000*l.* at the least." Defendant suggested that Pegsdon Lodge should be pulled down altogether. After receiving that report, he met Mr. Waugh at Hexton on September 24. A Mr.

Milligan was there, and he made an offer to take "Summerville" at a rent of 50*l.* a year. They considered the alterations necessary to be done to that house, and witness asked what it would cost to pull the older portion of the house down. Defendant said he thought about 800*l.* Witness replied: "If it can be done at 800*l.*, I will have it done, and Mr. Milligan will take it." Witness also said that, if a dry cellar could be put in there it should be done, but not at an increased cost. It was arranged on that day that the old portion was to come down, but not the new portion, and that 800*l.* was to be the cost. He rejected the scheme as to the glasshouses. He wanted cheap glasshouses built against the existing wall. He also objected to the stables, because he did not want to spend that amount of money on them. He insisted upon that estimate being reduced. Witness said that he would leave all the conservatories and gardens until his return from Japan. On that day he said he would not have Pegsdon Lodge pulled down. On October 10 defendant suggested pulling down Pegsdon Lodge and putting it the other side of the road. Witness would not agree to that. All he asked the defendant to do with regard to Pegsdon Lodge was to increase the bedroom accommodation—in number rather than in height. From Pegsdon they went on to Meg Cottages, and there he simply wanted the bedrooms made rather higher and a slight addition at the west end. From Meg Cottages they went to Hexton Lodge, and he decided that it should come down and be rebuilt.

Had you at any time named a sum that you intended to go to in your outlay upon the hall and all the rest of the works?—I told Mr. Waugh that I would not like to go on with the thing at a greater cost than 10,000*l.* That was to include everything.

Examination continued,

Final drawings were to be put before him before he went to Japan. On October 13 the question was discussed as to the external brickwork of "Summerville." Defendant was not present, but his son, Mr. Brunel Waugh, was, and he produced several sample bricks, and he decided upon a red brick. He received some revised plans before he went to Japan. On October 25 there was the submission of the final plans to him, and he and defendant discussed what should be done as to payment during his absence abroad. Witness told defendant that, if he would undertake to direct Mr. Dean, he would leave that gentleman a power of attorney. Mr. Dean was supposed to do nothing but pay under the direction of the defendant. He gave Dean the power of attorney on October 26. The estimates which were submitted to him along with the general plans were set out in the correspondence on November 2.

May I take it, shortly, when you sailed for Japan you intended the whole of this work, that was to cost 14,596*l.*, should be done in accordance with the plans you had approved?—I did expect it.

His lordship: He had approved of the estimates which amounted to 14,596*l.*?

Mr. Compston: Yes.

Examination continued,

On December 25 he cabled and wrote Dean to suspend the alteration to the hall. On January 17 the contracts for Meg Cottages and the two lodges, Hexton and Pegsdon were signed.

Mr. Compston said that the contracts for Meg Cottages and the two lodges, Hexton and Pegsdon, were all let in one contract, and the three together came to 1,280*l.* The contract of "Summerville" was for 1,975*l.*, for the stables 1,129*l.* for the builder's work alone.

Examination continued,

On his return from abroad in September or October, 1901, he found that his instructions had not been followed. He found that Pegsdon Lodge had been pulled down and rebuilt, and white bricks used instead of red, the new buildings being to the old plan. The height was, he thought, higher than the plans submitted to him, and the bay window was carried up two stories instead of one. With regard to Meg Cottages, he complained that the old buildings had been pulled down entirely, and that the new structure was in white brick instead of red, and that the height was far in excess of the plan. With reference to "Summerville," he found the old part pulled down, white brick instead of red, and that the building was considerably higher—about 7 ft. higher at the ridge—than what it was in the plan submitted to him. The length of the billiard-room was 5 ft. longer than the other one. The house was longer, and nothing at all like what he wanted. He had given orders to Mr. Newton (the builder) direct for work at the stables at "Summerville." The rearrangement there was to be about 30*l.*, but on his return he found that 126*l.* had been paid to Newton for the work there. In addition, defendant had made various alterations to the buildings without his authority. He found that his instructions with regard to the lake had not been carried out. He also complained of 193*l.* being spent on the mill and the mill stream without his authority.

The witness was taken in great detail through other complaints he had against the defendant for expenditure for work on a trout stream. He said he had never intended to spend 1,500*l.* on greenhouses.

Cross-examined by Mr. Tindal Atkinson,

I think you have been a little unfortunate, have you not, with regard to everybody you employed in connexion with this estate? Mr. Shillitoe was your agent, was he not?—Yes.

A solicitor at Hitchin?—Yes.

I believe you got rid of him, did you not?—I dismissed him.

And you brought an action against him for damages for cutting some trees, did you not?—And shooting my game with his friends without my permission.

The case lasted for four days, and the verdict was against you, I think?—Yes.

He was suing for his account, and you counter-claimed for very heavy damages. Mr. Dams was the head gardener, was he not?—He was the gardener.

You dismissed him, I think?—I dismissed him.

Mr. Dean, who had been your father's confidential secretary and cashier, I think, in the employment of the family for over forty years, you have recently dismissed?—I said it would be better if he resigned.

Cross-examination continued,

The first claim was between the estimates and what was spent. The first claim was as between outlay and estimates.

Do you suggest now that Mr. Dean was induced to sign those contracts in excess of the estimates in consequence of Mr. Waugh withholding the instructions you had given him?—Mr. Dean will be able to say.

Now you make those charges both in your statement of claim and in the letter. In the last amended statement of claim I see that you have cut that out altogether, and you have put your case now as a claim of the amount between the contract prices and the actual cost, recognising Mr. Dean's signature to those contracts? What made you do that?—There were certain letters came up afterwards, I think. I was advised to do it.

Now let me refer you to this passage in a letter of November 12, 1900: "The letting of all the contracts, both of hall and cottages, must, under no circumstances, exceed estimated estimates, everything included, otherwise you"—that is, Dean—"have full powers to act as you think best." Now, there is your own letter communicating to Mr. Dean the instructions that the estimates were in no sense to be exceeded, and yet you made this charge against Mr. Waugh that he had misled Mr. Dean by not communicating your instructions that the estimates were not to be exceeded. How do you explain that?—I still think that Mr. Waugh ought not to have gone on, in face of what I said to him.

Now, that is not what I ask you. How do you justify this grave charge against Mr. Waugh in the face of this letter?—Because I had given Mr. Waugh definite instructions.

So you had Mr. Dean?—If Mr. Dean does wrong, it does not exonerate Mr. Waugh. Mr. Waugh was under obligations to me to carry out my instructions as well.

Cross-examination continued,

He suggested that Mr. Dean was not informed about the pulling down of Meg Cottages and Pegsdon Lodge until long after they were down. He first learnt that the estimates had been exceeded in October, 1901. He complained about it as soon as he had seen the place, so far as he knew.

Was that after Mr. Waugh had made a request to you that you should pay an amount of 250*l.* to him?—Yes; that was.

It had been "Dear John" I notice up to that time, and, when he asked for 250*l.*, the letters after that time were all "Dear Sir"?—If they are so they are so.

And it was after he had made a claim for 250*l.* on account that you for the first time, on September 21, made any complaint at all as to what had happened. Is that not so?—I wanted to know why this money was to be paid.

Cross-examination continued,

He did not know until his return from abroad that Mr. Dean was getting a weekly report from the clerk of works. If he had known what was afterwards reported to him as to the condition of the Summerville house, he should have had a smaller house built, not occupying so much room. He had claimed 500*l.* from the defendant for having used in Meg Cottages and "Summerville" white bricks instead of red. It was not upon his express instructions that white bricks were used. Defendant had never told him that Mr. Milligan should be charged more rent than 50*l.* a year for "Summerville." He had paid Mr. Newton cheques as against the certificates signed by the defendant. He had told Mr. Newton that, as the defendant had ordered the work and given certificates for it, then he (witness) was bound to pay it. After a time, Mr. Dean insisted upon having, and did have, weekly reports from the clerk of works to show how the work was going on. Mr. Waugh was an engineer and architect of experience. He never gave instructions to anybody to make the trout stream. He claimed from the defendant 214*l.* upon that head.

By his lordship: On his return from abroad he stopped the work upon the plans at the hall, finding that the tenders were so much in excess of the estimate. The lowest tender was 15,000*l.*, and the highest about 20,000*l.* He declined to go on with it, because defendant's estimate was only about 7,000*l.*

On what ground do you decline to pay your architect?—Because the tenders were so much in excess of the estimates.

Then is it your view, as a man of business, that, supposing an architect has estimated, we will say, 7,000*l.*, and you see his plans and say you do not like them and make alterations, and then tell him to get tenders, if you refuse the tenders you can decline to pay for the plans; is that your view?—I took it that the estimate of 7,000*l.* was a basis upon which I could go.

The Lord Chief Justice: All I can say at present is that I shall not act upon that view, and I believe it is exactly contrary to the law.

Mr. Tindal Atkinson having cross-examined witness at great length on his various heads of claim against the defendant in the statement of claim, asked if he remembered having an interview with Mr. Newton in his drawing-room at "Summerville." The witness said he did remember it. His wife was present at the interview.

Did you say that you had had the strictest investigation made, and that money had passed between Mr. Newton and Mr. Waugh?—Yes; I asked him if he had not paid Mr. Brunel Waugh 10*l.* and never got it back again, and he said that was so.

You said you had had the strictest investigations made?—I said I would have the strictest investigation made.

Did he say, "What do you mean?" And did you say this to him, "Now, make a clean breast of it, Mr. Newton"? Now, be careful.—I never said that. I heard that this money had passed, and I said: "If there is anything, make a clean breast of it."

Did he say, "Of what?"; and did you say, "Of money paid to Mr. Waugh"?—I asked him if he had paid more than 10*l.*

Did he say that they had some money when they ran short on one occasion?—That was the explanation he gave.

Did not he tell you, and do not you know perfectly well, that it was a temporary loan obtained by Mr. Waugh when he had to pay his hotel expenses?

The witness said he did not know it, and also, in answer to further questions, denied that he had suggested that Newton's books should be examined for the purpose of ascertaining whether money had passed between him and Mr. Waugh.

Re-examined,

He had dismissed the gardener, Dams, because he had neglected his work. His business belonged to a company, and Dean was asked to resign by the directors. His dismissal was nothing to do with this matter at all. When he first put forward his claim, he did not know that the schedule of prices had been sent to Mr. Dean from Mr. Waugh. He then, upon advice, made certain changes in his pleadings.

Mr. Chas. Dean, examined by Mr. Lush, said he was under the impression that 10,000*l.* represented the total figure plaintiff wished to spend. He had only been to Hexton twice in addition to the first time, when he went there with the plaintiff. On his first official visit he found that Pegsdon Lodge had been demolished down to the ground. Defendant never consulted him about it. He also found that the new portion of "Summerville" had been pulled down, and Mr. Brunel Waugh said that his father had ordered that to be done. He was never consulted in any way, either as regards plans, or construction or anything. Witness, further examined, said the only order he gave in the matter was as to the carting of the mud from the lake on to the park land, but he was given to understand that that was not to be included in the contract.

Cross-examined,

Mr. Hodgson never left the estimates with him. The only copy he ever received was from the defendant. With the exception of one, all the contracts were signed after he

got the estimates. He wrote a letter to defendant on December 28, 1900, to keep down all contracts compatible with good work, and he repeated that many times in his correspondence. He thought it was usual in contracts that things sprang up which had not been anticipated. He stipulated that he should have a report direct from the clerk of works. He did suggest that, under the power of attorney, he was merely a person to sign cheques.

His lordship: In my opinion, Mr. Atkinson, the rights of this case do not depend upon any supposed authority given to Mr. Dean or supposed consultation with Mr. Dean. I think Mr. Waugh rightly took upon himself the responsibility. The whole question will be whether there is negligence or breach of contract, having regard to the peculiar position in which Mr. Waugh was placed. If Mr. Waugh is not prepared to justify the thing upon the merits, the apparent sanction of Mr. Dean will not justify it.

Mr. Tindal Atkinson: Mr. Waugh is quite prepared to deal with that.

His lordship: I still say, having regard to the fact and taking "Summerville" as an instance, and only as an instance, and not expressing any opinion, and as there had been an estimate for the contract, I think it does impose on the architect carrying out the work the responsibility of taking care to see that only really what is necessary is spent.

Mr. Tindal Atkinson agreed, and said he had nothing further to ask the witness.

Mr. Robert Hudson, examined by Mr. Clavell Salter, said he was a member of the firm of Mawson & Hudson, architects, of Bradford. He had been consulted by the plaintiff with a view to ascertaining why the sums of money he had been called upon to pay had exceeded the estimates and contracts. He had been carefully into the matter with a view to advising him on the subject. He had been many times to the place, and had had the plans, correspondence, prices, and contracts before him.

The witness, having given detailed evidence in support of the claim, also gave evidence as to the defendant's counter-claim, stating that in several instances the defendant's charges were excessive.

Mr. Salter asked the witness what he said as to the plaintiff's claim for 4½ per cent. on the lowest tender that was received *re* Hexton Hall.

His lordship (to witness): Supposing you had honestly prepared the plans on the instructions of a gentleman asking you to do it, and the specification and tenders and the estimate came out at 10,000*l*., whereupon the employer says, "I am not going on with the work; it is too much money altogether; I am not going to pay," what should you charge for your plans? That is a very simple question, and you ought to have no hesitation in answering it?—I should say, 2½ per cent. the the plans and 1½ per cent. for the quantities.

And for tenders?—Nothing for tenders.

You do not agree with the ½ per cent.?—No.

Examination continued,

Assuming that the owner desired to spend 7,000*l*. only, the defendant's plans were no use for that purpose. If he had prepared plans which were of no use in consequence of his estimate being wrong, he thought he would have a difficulty in getting his charges in such a case as that.

Cross-examined,

He was not a member of the Institute of Architects. It was not the first time that he had heard of a charge of 2½ per cent. upon the execution of plans where they were not carried out. He agreed to the other item of 5 per cent. where the works were carried out.

What is the scale upon which this bill is founded which you dispute?—The great dispute was that the house was to cost 15,000*l*., and the estimate was 7,000*l*.

Is that the only thing you criticise in this bill?—No; I criticise two or three other items.

Mr. John Leaning, a member of the firm of John Leaning & Sons, quantity surveyors, of Bedford-row; Mr. Butler Wilson, F.R.I.B.A.; Mr. Christopher Noble, clerk of works; Mr. George F. Cowley, clerk of works; and Mr. George Marshall, a contractor, having given evidence, the plaintiff's case closed.

Mr. Tindal Atkinson said he did not propose making two speeches, but would at once put the defendant into the box. Accordingly,

Mr. John Waugh, examined by Mr. Schiller, said he was an architect and civil engineer, practising in Bradford, and he had practised there for the last thirty-three years. He had known the plaintiff since he was a small boy, and his father before him. At the time plaintiff consulted him about the Hexton Estate he was a very great friend of his. After plaintiff acquired the estate he discussed the plans with him on three occasions. He had also many talks with the plaintiff as to the alterations. Several sketch plans were submitted in the ordinary way to the plaintiff. Plaintiff finally decided which portion of each building should stop up and which portion should come down. Plaintiff then asked for some estimates, and in an off-hand sort of way witness gave him estimates. They were given verbally. As regarded "Summerville," plaintiff asked him what it would cost, and witness, having regard to what the plaintiff wanted to do, said it would come to about 900*l*. The plans were from time to time altered by the plaintiff, and, after he had given the estimate, he prepared further plans. He submitted to the plaintiff before he went abroad what were called the approved plans. When these plans were approved they set to work with the rather better-considered contract drawings. The plaintiff had given him no limit with regard to the cost of "Summerville." Plaintiff had never given him a limit which he was not to exceed. He never pretended that the sketch plans were accurate plans. Plaintiff never told him that "Summerville" was not to exceed 1,000*l*. in cost, nor that the rent of the place was to be based on the expenditure upon it. He did suggest to plaintiff that he should pull down Pegsdon Lodge and put it the other side of the drive. Plaintiff said he would not have it there. Plaintiff had agreed to the contract price paid for the lake work. He had discussed many times with the plaintiff the alterations on the various parts of the estate. With reference to the plaintiff's complaint about the bricks, the witness said that plaintiff never told him that red bricks were to be used. When plaintiff returned from Japan witness had a conversation with him with regard to the alterations and additions that had been made to the buildings. They went into the thing in detail, and they were together about two or three hours. During the whole of the time that witness was with the plaintiff the latter did not utter one single word of complaint about what witness had done. He had explained to plaintiff what he had found it necessary to do at Pegsdon and Meg Cottages, and that he had had to pull the front wall of the stables of the hall down in consequence of putting a roof on which weighed about thirty tons. It was necessary to put buttresses, because he thought the plaintiff was going to put a thirty-tons roof on, but plaintiff abandoned that idea, and that was the reason the buttresses were there. Before he gave the estimates for the approved plans he had not examined the foundations of "Summerville," the cottages, or Pegsdon Lodge. Plaintiff never complained about the cost of the work until after witness asked for payment of his account. He called Dean's attention to the discrepancy between the estimates and the tenders for "Summerville." Dean said that Newton's tender was considerably more than what he called the summary of prices. Witness replied that that was quite possible, but it was carrying out the plaintiff's wishes. Dean then said that Newton could have the contract if he would take it for the price of the lowest tender. Witness told Dean that it was usual to give the contract to the lowest tender. Dean replied "business is business, Mr. Waugh." The reason the contract work came to a great deal more than the original estimate was due to the pulling down and raising of the cellars, and the fact that they elected to take nothing from the hall. He explained to Dean the reason of alterations he had not foreseen. He treated nearly all the contracts as measure and value contracts. It was such a complicated case of extras that he thought that was the fairest way to do it. He thought he had treated Hexton Lodge as a lump sum contract, because that was a new building altogether.

Mr. Atkinson said he thought the defendant had made a mistake about the contract of Hexton Lodge, and that he had treated all the contracts in the same way.

The witness stated that he was not quite sure about that matter, as his son attended to it.

The witness was then examined by the learned counsel as to the several matters complained of by the plaintiff, and he justified everything he had done and asserted that he had acted in the best interests of his client.

Cross-examined,

Plaintiff told him that he wished to have the finest glasshouses that he could get, and the very best stables in the county. Pegsdon Lodge and Meg Cottages were pulled down on his responsibility. He knew that plaintiff did not wish Pegsdon Lodge pulled down, but it was necessary, because the foundation was bad, and there was a damp course. He did not prepare the quantities for all the buildings himself, but they were prepared in his office. He went over everything that Newton had done before he certified for it. Plaintiff had never stipulated that red bricks should be used. Plaintiff had never told him, with regard to Meg Cottages, that if his scheme could not be carried out he would not have them touched. The calculations he had made were necessarily of a rough character. It could not be an accurate estimate, as he had not got the quantities. He was very much surprised, with regard to Hexton Hall, when the lowest tender came out at 15,000*l*., instead of 7,400*l*., and he advised Mr. Dean to abandon that matter until Mr. Hodgson came home.

Mr. Brunel Waugh, examined, said he was an architect and civil engineer, and was the eldest son of the defendant. Before the plaintiff went abroad witness saw him from time to time, and he had many discussions with him with regard to the plans. The plans had to be altered from time to time in consequence of the additional suggestions made by the plaintiff, and that involved more work. The estimates supplied to the plaintiff were, in consequence of the plaintiff starting for Japan, hurried estimates. The reason why the tenders were larger than the estimates was due in a great measure to local circumstances. The carriage of material had a great deal to do with it. They had not at first sufficiently taken into account the cost of carriage.

Mr. Clive Waugh also gave evidence as to the preparation of the greenhouse plans, and as to the work done at the lake.

Mr. Thos. William Cutler, F.R.I.B.A., examined, said he had been in practise for forty-two years. He visited Hexton on July 19 last. Speaking generally, the work appeared to be substantially and well done. From his experience, he found it very difficult to estimate beforehand the actual or probable cost of pulling down and altering a portion of old buildings. A number of things might occur which were not foreseen.

Cross-examined by Mr. Salter,

If an architect was asked to give an estimate of the probable cost of building operations, and he wanted to be accurate, he ought to carefully prepare plans and get out quantities.

What is there in this case to justify an error of 120 per cent.?

The witness replied that he understood that great hurry was necessary in consequence of the plaintiff starting for abroad, and the drawings were only intended to be approximate drawings, and were not sufficient to enable anyone to give an accurate estimate. The defendant had not sufficient detail to allow him to get an accurate price.

Supposing I told an architect to build me a house and he shows me a plan with rooms of a certain size, has he the right to build them of another size?—Not if you approve the plans definitely.

His lordship: I shall hold, of course, that, if the principal is there, he has no right to do so; but, in this case, the architect was in a very difficult position.

Mr. Salter (to witness): Before involving his principal in any substantial extra cost, should an architect communicate with his principal, if possible?—Well, I should do so.

His lordship asked the witness if there was any custom in the profession when plans were prepared and the work not carried out that the percentage due to the architect was calculated on the provisional amount.

The witness replied that he did not think there was any custom.

Mr. Thomas Wynn, F.S.I., practising as an architect and surveyor at Leeds, gave evidence as to going to Hexton in July last, accompanied by the last witness, to inspect the work. He agreed with what Mr. Cutler had said. He said that, in the case of alterations to old buildings, he had found it necessary in contracts of his own to re-measure the whole of the building. It was very difficult to find out where the old work left off and the new began and to get at it in a satisfactory manner.

At the conclusion of the defendant's case, Mr. Lush asked and obtained permission to recall the plaintiff for the purpose of rebutting some of the evidence given by the defendant and his son, Mr. Brunel Waugh.

The plaintiff accordingly went into the witness-box and denied *in toto* some of the statements made by the defendant and his son as to what took place at the interview after his return from Japan.

Mr. Atkinson, in the course of his address to his lordship on behalf of the defendant, commented on the way the plaintiff had originally launched his case against his client. He said that when the plaintiff started the action he claimed damages against the defendant founded on an express warranty by the defendant as to the figures of the estimate, and the measure of damage claimed was the difference between the amount of this estimate and the amount of the cost. In order to get rid of the difficulty of the fact that the plaintiff's attorney, Mr. Dean, had signed the

contracts which were in excess of the estimates, the plaintiff did not hesitate to charge the defendant with the grossest dishonesty. There existed on the first statement of claim a charge which no one could read without coming to the conclusion that it was a deliberately made charge of the gravest professional misconduct. The object of that charge was to get rid of the difficulty that Dean had signed those contracts. The plaintiff's case being framed on the estimates, it was necessary to get rid of the contracts, and that was the reason the plaintiff made this disgraceful charge against the defendant. In March, 1902, the statement of claim was amended by the plaintiff adding a number of items of claim, a great many of which had now gone. The next amendment was in June, 1904, two years after. It was only a few months ago that the plaintiff withdrew that charge out of the statement of claim, and he then rearranged his claim altogether. The learned counsel said he hoped to convince his lordship that the claim by the amended statement of claim was a claim confined to the difference between the contract price and the cost. He contended that the evidence of the plaintiff could not be relied upon, while, on the other hand, there was absolute confirmation of the evidence which the defendant and his son had given. He submitted that the plaintiff must have known perfectly well that the estimates which the defendant had given him were of the roughest possible character. The plaintiff must have been aware that the estimates were to be taken *cum grano salis*. The learned counsel, having briefly commented on the evidence given, in concluding his remarks, reminded his lordship that the result of this trial was of the greatest importance to his client, because the charge that the plaintiff really made against him was that of professional misconduct. He hoped his lordship would say that there was no ground for the claim made against the defendant by the plaintiff, and that the defendant was entitled to judgment both on the claim and counterclaim.

Mr. Clavell Salter replied on behalf of the plaintiff. He contended that the evidence showed that the defendant had, in the enforced absence of the plaintiff abroad, done his work in a manner which was at once unskilful, careless, and reprehensible. The defendant had ignored the contract to build for a lump sum of money, and had treated the whole matter as though the parties had made a perfectly different contract—viz., that this work should be done, and then, on measurement, whatever it came to on the schedule of prices, should be paid by one party to the other. The defendant had arrived at that sum regardless of the contract, and therefore he had been guilty of a breach of duty in certifying that that was the sum the plaintiff was liable to pay. With reference to the counter-claim, the learned counsel said the only really important point there, was as to whether the defendant was entitled to anything with regard to the preparation of the Hexton Hall plans. He submitted he was not.

At the conclusion of the learned counsel's address, Mr. Lush disclaimed any intention during his conduct of the case of imputing anything like fraud to the defendant or his family.

His lordship said he was pleased to hear that, but asked if that withdrawal was made on the instructions of the plaintiff.

Mr. Lush said it was not, as, unfortunately, his client was not then present in court.

His lordship said that he could not take any notice of the withdrawal unless it was made with the plaintiff's authority. He said that the learned counsel had properly conducted the case on his instructions, and therefore no disclaimer from him was necessary. If, however, any disclaimer was coming from the plaintiff, it must be made with his authority. He hoped to give judgment next Monday week, or, at any rate, next Monday fortnight.

Judgment was accordingly reserved.

## WEST-END BUILDING DISPUTE.

THE case of Julie Dutrey *v.* The Assets Realisation Company, Ltd., came before Mr. Justice Buckley, in the Chancery Division, on the 29th ult., an action by the plaintiff for damages for injury occasioned to her business premises owing to the action of the defendants.

Mr. Artbury, K.C., and Mr. Foà appeared for the plaintiff; and Mr. Buckmaster, K.C., and Mr. H. Gregory for the defendants.

It appeared that the plaintiff was the lessee of 5, Hanover-square, for a term of twenty-one years from September, 1899, and on those premises she carried on the business of a Court dressmaker. She asserted that she was entitled by prescriptive right to support from the adjoining house—viz., Hanover-buildings, the property of the defendant company. The plaintiff's case was that defendants had deprived her premises of support by pulling down the old buildings and erecting in their place another building of increased height without properly supporting or securing plaintiff's walls, thus weakening them and cracking them. The wall separating her building from the defendants' had been fractured, and, in consequence of its settlement, the front wall, partitions, and ceilings, and papers were damaged on the second and third floors. The stonework in front of the house was also fractured. By an agreement the plaintiff entered into with the defendants in March, 1901, defendants agreed to indemnify the plaintiff against all damage in consequence of their building operations, and she sought damages accordingly. The plaintiff also alleged that the defendants had interfered with her trade, some soot and bricks falling down a chimney and damaging some valuable gowns.

Defendants set up the defence that the damage was not due to any action of theirs, but to the age and other things connected with the plaintiff's building.

The expert witnesses called for the plaintiff were Mr. A. J. Hopkins, Mr. William Woodward, Mr. E. A. Lansdowne, and Mr. P. A. Hopkins.

For the defendants Messrs. Sawyer & T. H. Watson, architects, were called and gave evidence.

His lordship, in the result, in giving judgment, said that upon the evidence he found as a fact that the operations of the defendants had deprived the plaintiff's building of the support to which it was entitled. The result of the evidence showed that bricks were fractured in the party wall line. He found that there had been a subsidence and loss of support to the plaintiff's building. Defendants said that the injuries were due to old age. But he thought that the plaintiff was entitled to damages for the injuries done to her house by the building operations. He gave judgment for the plaintiff for 125 guineas damages and the costs of the action.

## PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

23,786 of 1903.—T. GARE: *Solutions for Treating Wood and other Fibrous and Porous Materials or Compounds.*

A solution for treating wood and other fibrous or porous materials or compounds, consisting of vulcanised rubber or rubber composition in a powdered state, and resin or resin and boiled linseed oil or castor oil, acting as solvents for the said rubber or rubber composition, the said rubber or rubber composition being added to the said oil gradually in small quantities.

27,034 of 1903.—T. RAY: *False Grates or Fuel Economisers for Domestic and like Stoves and Fireplaces.*

According to this invention the front bars of the false grate or economiser project downwards for a suitable depth from a top bar, and are formed with horizontal portions of convenient length to constitute the bottom bars on which the fuel is supported and the ends of the bottom bars are merged into or connected to the usual back bar which is strengthened by a curved bar or plate of more or less "fish belly" shape, or the back bar itself may be "fish belly" shaped. Or again, the ends of the bottom bars may be extended downwards and merged into or connected to a "fish belly" bar or plate, and the usual back bar dispensed with.

28,515 of 1903.—J. R. WARTNABY: *Window Sashes and Frames.*

This invention relates to window sashes and frames, and has for its object certain improvements whereby the usual cords, weights, pulleys, pockets, and hinges are dispensed with, and certain advantages are gained over the ordinary window sash and frame. In this invention the sash style of the window is provided with a suitable number (say four) of projecting pins, pegs, or equivalents, which may project from the edge of the sash, and be held in a forward position by means of suitable springs against the action of which the projecting pins or pegs may be pressed inwards.

28,612 of 1903.—T. W. TWYFORD: *Water-closets and Urinals for Ships, Railway Carriages, and other uses.*

Folding water-closets and urinals, consisting in the arrangement, in combination with a main flushing tank, of a supplementary tank or chamber which is supplied from the main tank with a quantity of water adapted to be delivered into the folding pan or basin on the latter being turned down for use, the passage of water from the main tank into the supplementary tank, and from the latter to the outlet pipe being controlled by a pair of valves operated mechanically from the folding part of the apparatus.

28,683 of 1903.—G. A. CHADDOCK: *Windows, Doors, and similar Aperture-closing Devices.*

Windows, doors, and similar aperture-closing devices which consist in mounting one or more closing devices to swing on a horizontal axis and to slide bodily in a vertical plane either or both of which motions may be utilised to bring the parts into various positions.

28,733 of 1903.—C. H. THOMPSON: *Manufacture of Bricks, Tiles, Slabs, and the like.*

The manufacture of bricks, tiles, slabs, coves, mouldings, and the like from waste glass, or from a mixture of waste glass and other substances, moulded into any desired shape or size, and afterwards placed in a suitable furnace and heated to cause agglomeration or cohesion of the materials used.

109 of 1904.—A. TATE: *Window Sashes and Frames.*

According to this invention a double cord is connected with the upper and also the lower sashes, one end of each cord being attached to each side of the sash at its top end. These cords pass over pulleys situated at each end of the upper portion of the sash frame, down one side of the frame, and then on to winding drums arranged preferably below the sill. A separate drum is provided for the double cords of each sash. Each drum is suitably mounted in a bracket, and has a toothed gear wheel rigidly secured thereto. Another toothed wheel, but of smaller diameter than the one mentioned, and also carried by the said bracket gears with the first-named wheel. On turning a handle fitted to the spindle of this smaller wheel the cord is caused to be wound upon the drum, and so raises the sash. Suitable notches may be formed in a plate with which the handle can engage for temporarily holding it, so that the sash can be held at any height. A coiled spring is attached at one end to the drum spindle, and the other to a suitable part of the bracket. The object of this spring is to prevent the cord unwinding too rapidly, and thus allow the sash to move gently when it is being lowered.

633 of 1904.—M. J. ADAMS: *Lavatory Basin, Sinks, and Similar Appliances.*

The discharge outlet of a lavatory has hitherto been at the back or in the centre, and has never been placed in the front where it is now desired to place it. The object is two-fold. In the front it is practically unseen and out of the way, and the front outlet enables one to use a waste pipe or connexion, which also serves to support or carry the basin by the thrust of this waste pipe or connexion against the wall. The special novelty and feature of this invention is the placing of the waste outlet in front for the purpose described in a wide basin or sink. The outlet may be placed at the front, but to one side so that the waste pipe forms one of two or more supports.

2,200 of 1904.—J. MUIR: *Window Sash Frames.*

In window sash frames the combination, comprising sliding bars, grooves, and plates in said bars, and opening out sash frames fitted with short projecting kneed plates to fit the grooves and plates in the sliding bars.

17,662 of 1904.—J. A. SCHNEPPE: *A Combined Door Stop and Burglar Alarm.*

A wedge-shaped door chock provided with contacts for electric light and bell devices, said chock adapted to be fixed to the floor in a suitable position for preventing the door from being opened, so far as to permit entry, while at the same time the electric light and bell devices are automatically put into action.

19,628 of 1904.—A. PAILLET: *Pivots for Swing Doors.*

A bearing for swing doors, consisting in a disc fixed to the pivot of the door, an annular ball race provided with swells attached to said disc, a second similar ball race fixed to the bearing of the pivot, balls running on said races, and annular discs for keeping the balls in position.

20,140 of 1904.—E. JOHNSON: *Windows, and the like.*

A sash cord holder for windows, and the like, having either a flat or curved surface, or with one or a series of projections or teeth, adapted to fit on the sash stile of such windows, and to hold the sash cord in the position required.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

20,688 of 1904.—R. AMES: *Joints for Earthenware and Similar Pipes.*

An earthenware or similar pipe provided with spigot and socket ends, the spigot end having a ring at the extreme end thereof and a collar at a distance from the end of the spigot greater than the depth of the socket, and jointing holes being formed in the collar.

21,323 of 1904.—W. P. THOMPSON (S. W. Funk): *Casements and Hinged or Pivoted Sashes or Doors.*

A window casing, consisting of a window sash pivoted therein by pivots located at one side of the sash and near one edge thereof, and weather strip means secured to the window casing in a plane to one side of the pivots of the sash in a position to engage with the edges of the sash when the latter is closed.

23,816 of 1903.—T. WARBURTON: *Reflecting Apparatus for Incandescent Gas Lamps in Domestic and Shop Use.*

This consists in attaching mirror reflectors integral with or detachable from a ring which fits on the shoulder or the upper edge of the chimney or globe, or attaches by means of groove pieces or the like to the wire holder in anti-vibration devices, or to a smut catcher.

25,595 of 1903.—R. S. FOSTER: *Rotary Fans for Use in Connexion with Dust Collection, Ventilation, and other purposes.*

This invention applies chiefly to rotary fans for use in connexion with dust collectors for use with high-speed machinery ventilators, but is also applicable to other purposes. The apparatus is cylindrical in form, and connected to a cast-iron base, and provided with one or more inlets and outlets, the inlet being connected with the main dust shaft outside, and to a spiral incline inside the cylindrical case which is connected to the outlet of the receiver. A hollow shaft or spindle is constructed, cupped or recessed at each end, and set vertically in the cylindrical case, provided with a small pulley at its lower end, and a suitable fan, at a required distance from the top, and above the inlet and spiral incline, this fan nearly fills the circumference of the case in which it rotates.

27,697 of 1903.—W. BOYES, SEN., and W. BOYES, JUN.: *Apparatus for Heating Buildings and other places.*

This invention refers to improvements in, and relating to, apparatus for heating buildings, and consists in disposing in what is known as a self-contained stove, heated by burning a fuel, a metallic pipe through which water is passed from the bottom end to the top outlet leading to heated pipes located in the building or place to be heated. If desired the metallic pipe may be duplicated as often as desired or required according to the size of the self-contained stove, and for the purpose of increasing the efficiency of the same.

20,455 of 1904.—H. STANTON and A. W. STANTON: *Fire-resisting Floors.*

This relates to an improvement in fire-resisting floors by means of specially-shaped plates or slabs of cement, concrete, earthenware, or other suitable material arranged so as to cover the lower flanges of metal or bottom of wooden joists resting on or fitted to same.

20,466 of 1904.—E. A. BAKER: *Means for Escaping from Burning Buildings, and for other purposes.*

Means for escaping from burning buildings, and other purposes, consisting of a rod or bar provided with a bag or other receptacle, and guide wheels or rollers, capable of adjustment and operating in conjunction with a cable wire or cord fixed to said bar, and for connecting same to a rod or bar loosely fixed to a joist of a building.

21,053 of 1904.—A. MORGAN: *A Method and Process of Disinfecting.*

A method and process of disinfecting, consisting in forming an intimate mixture of about one part of paraformaldehyde, six parts of carbon, and sufficient gum tragacanth or other gum to form a stiff paste, thoroughly pulverising and intimately mixing the ingredients, and forming the mixture by pressure into blocks of any size and shape, and drying the blocks, which are ignited when required, the vapour of formaldehyde being gradually and uniformly disseminated.

21,139 of 1904.—A. MÜLLER: *Frame Buildings.*

A frame building having masonry or brickwork bases or piles upon which are erected sets of one or more uprights according to their position on the building, said uprights or certain of them being brought into erect position on said bases by turning them round horizontal bolts arranged at their lower ends, said bolts being carried in stationary angle-irons secured to said bases, and the uprights being then lowered on to the bases and fixed to the angle-irons.

21,140 of 1904.—A. MÜLLER: *Frame Buildings.*

A construction of frame buildings, consisting in the connexion of the central uprights with the ridge beam and the upper ends of the rafters in such a manner that the two ends of the rafters abut above said ridge beam fixed to the head of the upright, and are clamped between broad angle-irons by means of two traversing bolts.

## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

November 10.—By NICHOLAS, DENYER, & Co. (at Hurst Green).

| | |
|---|---|
| Etchingham, Sussex.—"Park House" and 2 acres, f. | £890 |
| Main-rd., four building sites, 3 a. 1 r. 10 p., f. | 440 |

November 15.—By HAMPTON & SONS (on the Premises).

| | |
|---|---|
| Notting Hill.—68, Holland-pk., f.p. | 3,875 |

November 19.—By FOX & VERGETTE (at Cambridge).

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|---|---|
| Shudy Camps, Cambs.—Part of "Street Farm," 73 a. 3 r. 4 p., f. | 1,525 |

November 21.—By HAMPTON & SONS.

| | |
|---|---|
| Kennington.—9, Kempsford-rd., u.t. 22¾ yrs., g.r. 4*l.* increasing to 6*l.*, y.r. 35*l.* | 245 |
| Wootten, Isle of Wight.—"Woodside" and 11 acres, f., p. | 2,900 |

By J. & R. KEMP & Co.

| | |
|---|---|
| Camberwell.—3, Boundary-ter., u.t. 49 yrs., g.r. 28*l.*, w.r. 72*l.* 2s. | 450 |

By MATTHEWS, MATTHEWS, & GOODMAN (at Pickering).

| | |
|---|---|
| Wombleton, Yorks.—Various enclosures of land, 82 a. 3 r. 4 p., f. and c. | 3,365 |
| A freehold house and 50 a. 2 r. 20 p. | 1,600 |
| House and farm buildings and 5 a. 2 r. 23 p., f. | 535 |
| "Moorfield's Farm," 47 a. 2 r. 32 p., f. and c. | 1,800 |
| Two freehold houses and gardens | 332 |
| Welburn, Yorks.—"Bowforth House Farm," 248 a. 0 r. 24 p., f. | 7,350 |
| Normanby, Yorks.—"Normanby Hill Farm," 218 a. 0 r. 9 p., f. | 3,900 |
| Five freehold cottages | 460 |
| Rudstone, Yorks.—A barley rent charge of 30*l.* 9s. 8d. | 750 |
| Nawton, Yorks.—"Nawton Pastures Farm," 91 a. 0 r. 16 p., f. and c. | 1,910 |

November 22.—By BRADSHAW, BROWN, & Co.

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|---|---|
| Limehouse.—19, Pigott-st., f., y.r. 35*l.* | 550 |
| Poplar.—20, Stainsby-rd., u.t. 27 yrs., g.r. 6*l.*, y.r. 50*l.* | 350 |
| Forest Gate.—Upton-la., a plot of land, area 3,000 ft., f. | 345 |

By DAVID BURNETT & Co.

| | |
|---|---|
| City of London.—3, Creechurch-la. (warehouse), area 500 ft. u.t. 69 yrs., g.r. 75*l.* 0s. 6d., y.r. 225*l.* | 2,050 |
| Tottenham.—Compton-rd., f.g.r. 84*l.*, reversion in 94½ yrs. | 1,722 |

By CHAMBERS, GIET, & FORD.

| | |
|---|---|
| Leyton.—263, High-rd., u.t. 76 yrs., g.r. 5*l.* 5s., y.r. 30*l.* | 285 |

By P. & G. GEEN.

| | |
|---|---|
| Norwood.—192, 194, 196, and 198, Rommany-rd., u.t. 65 yrs., g.r. 20*l.*, w.r. 118*l.* 6s. | 550 |
| Wandsworth.—26, 26A, 28, and 28A, Penwith-rd. (flats), u.t. 95 yrs., g.r. 12*l.* 12s., w.r. 91*l.* | 500 |
| Norwood.—24, 26, and 28, Upper-gr., u.t. 97½ yrs., g.r. 27*l.*, e.r. 130*l.* | 1,095 |

By NORMAN & SON.

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|---|---|
| Bow.—139 and 141, Tredegar-rd., f., e.r. 150*l.* | 2,200 |
| 2, Armagh-rd., f., e.r. 31*l.* 4s. | 330 |
| 4, 6, and 8, Armagh-rd., u.t. 59 yrs., g.r. 11*l.* 5s., w.r. 93*l.* 12s. | 730 |
| 2 and 4, Parnell-rd., u.t. 49½ yrs, g.r. 5*l.*, w.r. 57*l.* 4s. | 410 |

By ALFRED RICHARDS.

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|---|---|
| Whitechapel.—5, Great Prescot-st., f., y.r. 50*l.* | 1,575 |
| Holloway.—32 to 38 (even), Giesbach-rd., u.t. 71 yrs., g.r. 22*l.*, y.r. 128*l.* | 1,355 |
| Walthamstow.—The Avenue, two freehold building plots | 440 |
| Edmonton.—Firs-la., freehold building land, 1 a. 2 r. 35 p. | 510 |

By RUTLEY, SON, & VINE.

| | |
|---|---|
| Regent's Park.—3, Albert-st., u.t. 22¼ yrs., g.r. 4*l.* 10s., p. | 350 |
| Hampstead-road.—53, Charrington-st., u.t. 18½ yrs., g.r. 5*l.* 5s., y.r. 50*l.* | 335 |
| Kentish Town.—114, Savernake-rd., u.t. 77 yrs., g.r. 8*l.* 10s., p. | 825 |
| 59, Malden-rd. (s.), u.t. 45 yrs., g.r. 8*l.*, y.r. 46*l.* | 355 |
| 74, Patshull-rd., u.t. 62 yrs., g.r. 8*l.*, y.r. 45*l.* | 520 |
| Hampstead-road.—63, Oakley-sq., u.t. 39¾ yrs., g.r. 14*l.*, y.r. 65*l.* | 535 |
| Holloway.—63, Brecknock-rd., u.t. 36 yrs., g.r. 8*l.* 15s., e.r. 60*l.* | 350 |
| Ealing.—31, Waldeck-rd., f., y.r. 50*l.* | 700 |

By HORTON, LEDGER, & C. C. & T. MOORE (at Brighton).

| | |
|---|---|
| Hove, Sussex.—Shoreham-rd., St. Leonard's Park Building Estate, 16 a. 2 r. 11 p., f. | 5,900 |

November 23.—By BAXTER, PAYNE, & LEPPER.

| | |
|---|---|
| Lee.—17, Corona-rd., u.t. 70 yrs., g.r. 1*l.*, e.r. 55*l.* | 450 |

By G. GOULDSMITH, SON, & Co.

| | |
|---|---|
| Pimlico.—88, Belgrave-rd., u.t. 30 yrs., g.r. 14*l.*, y.r. 120*l.* | 1,150 |

By HAWKINGS & SON.

| | |
|---|---|
| Marylebone.—186, 188, 190, and 196, Marylebone-rd., u.t. 15¼ yrs., g.r. 110*l.*, y.r. 335*l.* 6s. | 1,285 |
| Balcombe-st., coachhouse and stables, u.t. 15¼ yrs., g.r. nil, y.r. 50*l.* | 345 |
| 15 and 16, Dorset-mews, u.t. 15¼ yrs., g.r. 20*l.*, y.r. 100*l.* | 545 |
| 85, Carlisle-st. (s.) and 10, Hardington-pl., u.t. 17 yrs., g.r. 8*l.* 8s., y.r. 50*l.* | 250 |

By RUSHWORTH & STEVENS.

| | |
|---|---|
| Kilburn.—35, Stafford-rd., u.t. 83 yrs., g.r. 7*l.*, w.r. 81*l.* 18s. | £610 |
| Pimlico.—20, Union-st., u.t. 16¼ yrs., g.r. 4*l.* 4s., y.r. 36*l.* | 225 |

By INMAN, SHARP, HARRINGTON, & Co.

| | |
|---|---|
| Camberwell.—46 and 48, Southampton-st. (s.), f., w.r. 68*l.* 18s. | 550 |
| Acorn-st., etc., f.g.r. 32*l.* 16s., reversion in 29 yrs. | 1,680 |

By WILTSHIRE & Co.

| | |
|---|---|
| Lee.—Boone-st., Wyberton House stables, with houses and cottages, f., e.r. 100*l.* | 1,250 |

By DOUGLAS YOUNG & Co.

| | |
|---|---|
| Kensington.—77, St. Dunstan's-rd., u.t. 84¼ yrs., g.r. 6*l.* 10s., y.r. 36*l.* | 340 |

By HAROLD GRIFFIN.

| | |
|---|---|
| Chelsea.—7, Luna-st., u.t. 60 yrs., g.r. 6*l.*, w.r. 51*l.* 12s. | 375 |
| Battersea.—33, Home-rd., u.t. 72 yrs., g.r. 6*l.*, w. r. 65*l.* | 405 |
| 16 and 17, Rowena-cres., u.t. 73 yrs., g.r. 10*l.*, w.r. 67*l.* 12s. | 475 |
| Norwood.—69, Farnley-rd., u.t. 80 yrs., g.r. 4*l.* 10s., w.r. 23*l.* 8s. | 110 |
| Balham.—20, 22, 24, 41 to 51 (odd), Cathles-rd., u.t. 86 yrs., g.r. 54*l.*, y.r. 284*l.* | 2,620 |

By A. BURTENSHAW & SON (at Hailsham).

| | |
|---|---|
| Hellingly, Sussex.—Part of Globe Farm, 7 a. 2 r. 9 p., f. | 1,100 |
| Enclosures of land, 17 a. 0 r. 19 p., f. | 1,350 |
| Freehold house and three cottages, area 0 a. 1 r. 14 p. | 250 |
| "Nabs Crook Farm," 20 a. 1 r. 33 p., f. | 420 |

By E. FEAR & WALKER (at Winchester).

| | |
|---|---|
| Winchester, Hants.—Highcliffe-pk., "Fernlea" and "Holmwood," f., y.r. 41*l.* 12s. | 475 |

By HAMPTON & SONS (on the Premises).

| | |
|---|---|
| Broadstairs, Kent.—The Esplanade, "Redlands," f., p. | 3,600 |

November 24.—By ANDREWS & HITCH.

| | |
|---|---|
| Poplar.—100, Brunswick-rd. (s.), u.t. 43 yrs., g.r. 4*l.* 10s., y.r. 37*l.* 6s. | 275 |

By J. H. BULMER.

| | |
|---|---|
| Rotherhithe.—70, Clarence-st. (s.), f., w.r. 26*l.* | 260 |
| 8, 9, 10, and 11, Clack-st., u.t. 53¼ yrs., g.r. 9*l.*, w.r. 104*l.* | 860 |
| 13, 14, 15, and 16, Dilston-gr., u.t. 45¼ yrs., g.r. 19*l.* 10s., w.r. 104*l.* | 775 |

By DRIVERS'.

| | |
|---|---|
| Stoke Newington.—41, Sandbrook-rd., u.t. 60 yrs., g.r. 5*l.* 10s., y.r. 28*l.* | 285 |
| Holloway.—58, Huddleston-rd., u.t. 62¼ yrs., g.r. 7*l.*, e.r. 50*l.* | 500 |

By LEOPOLD FARMER & SONS.

| | |
|---|---|
| Forest Gate.—25 to 43 (odd), Forest-st., f., w.r. 232*l.* 18s. | 2,160 |

By FAREBROTHER, ELLIS, & Co.

| | |
|---|---|
| Pimlico.—Lupus-st., i.g. rents 19*l.*, u.t. 28¾ yrs., g.r. 2s. | 340 |
| Effingham-st., i.g. rents 138*l.*, u.t. 33¼ yrs., g.r. 10*l.* 1s. | 2,255 |
| Marylebone.—124, 126, and 128, Marylebone-la. (s.), u.t. 15¼ yrs., g.r. 25*l.*, y.r. 208*l.* | 1,650 |
| Maida Vale.—106 and 108, Portsdown-rd., u.t. 41½ yrs., g.r. 12*l.*, y.r. 105*l.* | 1,200 |

By WM. STEVENS.

| | |
|---|---|
| Clapton.—12 and 13, Queensdown-rd., f., y.r. 103*l.* | 1,220 |
| 145, 147, and 149, Rendlesham-rd., f., y.r. 102*l.* | 1,635 |
| 184 to 194 (even), Brook-rd., f., y.r. 238*l.* | 3,955 |
| Walthamstow.—Westbury-rd., f.g.r. 15*l.*, reversion in 79¾ yrs. | 360 |
| Hackney.—150, 156, and 160, Lansdowne-rd., u.t. 78 yrs., g.r. 22*l.* 10s., w.r. 171*l.* 12s. | 1,160 |

By STIMSON & SONS.

| | |
|---|---|
| Holloway.—18, Furlong-rd., with a meeting house, u.t. 31 yrs., g.r. 10*l.*, y.r. 50*l.* | 460 |
| Poplar.—Woollett-st., f.g.r. 12*l.* 10s., reversion in 25½ yrs. | 530 |
| Brixton.—17, 19, and 21, Crawshay-rd., u.t. 58½ yrs., g.r. 15*l.* 15s., y.r. 94*l.* | 1,085 |
| Kennington.—184, Kennington-rd., u.t. 22 yrs., g.r. 13*l.* 6s. 8d., p. | 200 |
| Peckham.—78, Lyndhurst-rd., u.t. 52 yrs., g.r. 4*l.* 10s., y.r. 30*l.* | 260 |
| Battersea.—28 and 30, Savona-st., f., y.r. 53*l.* 6s. | 370 |
| Norwood.—13, Farquhar-rd., u.t. 55½ yrs., g.r. 2*l.*, y.r. 65*l.* | 550 |
| Anerley.—114 and 116, Marlow-rd., f., y.r. 70*l.* | 755 |

By A. W. TAYLOR & Co.

| | |
|---|---|
| Wandsworth.—40, Southfields-rd., f., y.r. 32*l.* | 365 |

By EDWIN EVANS (at Battersea).

| | |
|---|---|
| Battersea.—59 and 141, Beaufoy-rd., u.t. 64½ yrs., g.r. 19*l.*, w.r. 72*l.* 16s. | 465 |
| 53, 57, and 73, Speke-rd., u.t. 60 yrs., g.r. 15*l.*, w.r. 104*l.* | 620 |
| 29, Dulka-rd., u.t. 80 yrs., g.r. 6*l.*, e.r. 36*l.* | 315 |
| Brompton.—54 and 56, Richmond-rd. (s.), u.t. 37 yrs., g.r. 82*l.* 10s., y.r. 175*l.* | 745 |
| Clapham.—20, Larkhall-la., u.t. 22 yrs., g.r. 4*l.* 4s., y.r. 36*l.* | 220 |
| Pimlico.—46, Bessborough-st., u.t. 29 yrs., g.r. 10*l.*, e.r. 70*l.* | 540 |
| Kew Gardens.—16, Clarence-rd., u.t. 62½ yrs., g.r. 6*l.* 6s., e.r. 32*l.* | 298 |

By WORSFOLD & HAYWARD (at Dover).

| | |
|---|---|
| Dover, Kent.—50, Castle-st. (s.), f., y.r. 55*l.* | 790 |
| 43 and 44, Albany-pl., u.t. 75 yrs., g.r. 4*l.*, w.r. 25*l.* 2s. 8d. | 260 |
| 62 and 65, London-rd., f., p. | 530 |

November 25.—By R. STAFFORD CHARLES.

| | |
|---|---|
| City of London.—1, Gresham-st., and 62, St. Martin's-le-Grand, a profit rental of 200*l.* for 62¾ yrs. | 3,200 |

By BLAKE & DANNATT.

| | |
|---|---|
| Greenwich.—Calvert-rd., f.g. rents 15*l.*, reversion in 55½ yrs | 385 |
| Calvert-rd., f.g.r. 17*l.*, reversion in 63 yrs. | 420 |
| Bexley Heath, Kent.—Hawthorne-rd., "The Bungalow," f., p. | 370 |

By DOLMAN & PEARCE.

| | |
|---|---|
| Hampstead.—28, Parkhill-rd., u.t. 45½ yrs., g.r. 12*l.*, p. | 675 |

By MAY & ROWDEN.

Regent-street.—5 and 6, Coach and Horses-yd. (showrooms, etc.), f., y.r. 95*l.* ..... £1,750
Kensington.—9, Liscar-ter., u.t. 76 yrs., g.r. 10*l.*, y.r. 50*l.* ..... 400
Belgravia.—Wilton-cres., etc., i.g.r. 50*l.*, u.t. 18½ yrs., g.r. 12*l.* ..... 490

By FRANK WINTERTON.

Ilford, Essex.—19 and 20, The Market (s.), f., y.r. 95*l.* ..... 1,125
Clapton.—10 to 16 (even), Maclaren-st., u.t. 75 yrs., g.r. 20*l.*, w.r. 130*l.* ..... 560

*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

## TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

## MEETINGS.

FRIDAY, DECEMBER 2.

*Institution of Civil Engineers (Students' Meeting).*—Mr. R. T. McCallum, M.Inst.C.E., on "Midland Railway, West Riding Lines: The Construction of Contract No. 1." 8 p.m.

SATURDAY, DECEMBER 3.

*Incorporated British Institute of Certified Carpenters.*—Annual General Meeting. 6 p.m. (Carpenter's Hall, E.C.)

MONDAY, DECEMBER 5.

*Royal Institute of British Architects.*—(1) Business Meeting; (2) Adjourned Discussion on Papers read at the last meeting on "Ferro-Concrete." 8 p.m.

*Liverpool Architectural Society.*—Paper by Mr. Maurice B. Adams, entitled "More About Modern Libraries." Illustrated by plans and examples. 6 p.m.

*Society of Engineers.*—Mr. W. E. Storey on "Condensing Machinery." 7.30 p.m.

TUESDAY, DECEMBER 6.

*Northern Architectural Association.*—The Rev. H. C. Windley, M.A., on "English Church Architecture in its Relation to English History." 7.30 p.m.

*Institution of Civil Engineers.*—(1) Paper to be further discussed, "Distribution of Electrical Energy," by Mr. J. F. Cleverton Snell; (2) Time permitting, Paper "On the Construction of a Concrete Railway Viaduct," by Messrs. A. Wood-Hill and E. Davy Pain, B.A. 8 p.m.

WEDNESDAY, DECEMBER 7.

*Royal Archæological Institute.*—(1) Mr. J. Hilton, F.S.A., on "The Pfahlgraben and Saalburg, in Germany"; (2) Mr. Philip M. Johnston on "Mural Paintings Recently Discovered in Trotton Church, Sussex," etc. 4 p.m.

*Builders' Foremen and Clerks of Works Institution.*—Ordinary Meeting of the Members. 8 p.m.

*Edinburgh Architectural Association.*—"A Practical Demonstration of Architectural Modelling," by Mr. G. Hayes. 8 p.m.

*Society of Arts.*—Mr. W. F. Reid on "The International Exhibition at St. Louis, U.S.A. 8 p.m.

*Institute of Sanitary Engineers, Ltd.*—(1) Half-yearly General Meeting at 4.30 p.m., at the Offices of the Institute; (2) Annual Dinner 6.30 p.m., at the Holborn Restaurant

*Institution of Civil Engineers.*—Students' Visit to the Motor-Car Works of Messrs. D. Napier & Son, Acton Vale, W.

THURSDAY, DECEMBER 8.

*Society of Antiquaries.*—8.30 p.m.

*Institute of Sanitary Engineers, Ltd. (Lectures in Practical Sanitary Science).*—Dr. J. C. Thresh on "Water and Water Supply."—I. 7 p.m.

*Institution of Electrical Engineers.*—(1) Conclusion of Discussion on Paper on "Hydrodynamical and Electromagnetic Investigations Regarding the Magnetic-Flux Distribution in Toothed Core Armatures," by Professor H. S. Hele-Shaw, F.R.S., A. Hay, D.Sc., and F. H. Powell; (2) "Studies in Magnetic Testing," by Mr. G. F. C. Searle, M.A. 8 p.m.

FRIDAY, DECEMBER 9.

*Architectural Association.*—Paper by Mr. T. Raffles Davison, entitled "Some Architectural Reflections." 7.15 p.m.

*Edinburgh Architectural Association.*—Associates' Annual Dinner.

SATURDAY, DECEMBER 10.

*British Association of Waterworks Engineers (Ninth Winter Meeting at the Geological Society's Rooms, Burlington House, W.).*—(1) Ballots will be taken for the Council and Officers for 1905-6, and for new Members and Associates; (2) Paper entitled "The Appleton Extensions of the Warrington Corporation Waterworks," by Mr. Geo. Mitchell; (3) Paper on "Supply of Surface and Underground Water to Towns," by Mr. Frank Latham; (4) Paper entitled "Notes on Electrically-driven Pumping Plant for Water Supply, and Storage of Water under Pressure," by Mr. J. Hutton; (5) Presentation to Dr. Kemna of Gift subscribed by Members and Friends who took part in the Tour in Belgium. 11 p.m.

## PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

### BRICKS, &c.

| | £ s. d. | |
|---|---|---|
| Hard Stocks ..... | 1 14 0 | per 1000 alongside, in river. |
| Rough Stocks and Grizzles ..... | 1 13 0 | „ „ „ |
| Facing Stocks ... | 2 12 0 | „ „ „ |
| Shippers ..... | 2 10 0 | „ „ „ |
| Flettons ..... | 1 8 0 | „ at railway depôt. |
| Red Wire Cuts ... | 1 14 0 | „ „ „ |
| Best Fareham Red | 3 12 0 | „ „ „ |
| Best Red Pressed Ruabon Facing | 5 0 0 | „ „ „ |
| Best Blue Pressed Staffordshire ... | 4 4 0 | „ „ „ |
| Do. Bullnose ..... | 4 10 0 | „ „ „ |
| Best Stourbridge Fire Bricks..... | 4 8 0 | „ „ „ |
| GLAZED BRICKS. | | |
| Best White and Ivory Glazed Stretchers ..... | 18 0 0 | „ „ „ |
| Headers ..... | 12 0 0 | „ „ „ |
| Quoins, Bullnose, and Flats..... | 17 0 0 | „ „ „ |
| Double Stretchers | 19 0 0 | „ „ „ |
| Double Headers... | 16 0 0 | „ „ „ |
| One Side and two Ends ..... | 19 0 0 | „ „ „ |
| Two Sides and one End ..... | 20 0 0 | „ „ „ |
| Splays, Chamferred, Squints | 20 0 0 | „ „ „ |
| Best Dipped Salt Glazed Stretchers, and Header | 12 0 0 | „ „ „ |
| Quoins, Bullnose, and Flats..... | 14 0 0 | „ „ „ |
| Double Stretchers | 15 0 0 | „ „ „ |
| Double Headers... | 14 0 0 | „ „ „ |
| One Side and two Ends ..... | 15 0 0 | „ „ „ |
| Two Sides and one End ..... | 15 0 0 | „ „ „ |
| Splays, Chamferred, Squints | 14 0 0 | „ „ „ |
| Second Quality White and Dipped Salt Glazed ..... | 2 0 0 | less than best. |

| | s. d. | |
|---|---|---|
| Thames and Pit Sand..... | 7 0 | per yard, delivered. |
| Thames Ballast..... | 6 0 | „ „ |
| Best Portland Cement ..... | 29 0 | per ton, „ |
| Best Ground Blue Lias Lime | 20 0 | „ „ |

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

### STONE.

| | s. d. | |
|---|---|---|
| BATH STONE—delivered on road waggons, Paddington Depôt ..... | 1 6½ | per ft. cube. |
| Do. do. delivered on road waggons, Nine Elms Depôt ..... | 1 8¼ | „ „ |
| PORTLAND STONE (20 ft. average)— | | |
| Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf... | 2 1 | „ „ |
| White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf... | 2 2½ | „ „ |

| | s. d. | |
|---|---|---|
| Ancaster in blocks..... | 1 11 | per ft. cube, deld. rly. depôt. |
| Beer „ ..... | 1 6 | „ „ |
| Greenshill „ ..... | 1 10 | „ „ |
| Darley Dale in blocks... | 2 4 | „ „ |
| Red Corsehill „ | 2 5 | „ „ |
| CloseburnRedFreestone | 2 0 | „ „ |
| Red Mansfield „ | 2 4 | „ „ |
| YORK STONE—*Robin Hood Quality.* | | |
| Scappled random blocks | 2 10 | „ „ |
| 6 in. sawn two sides landings to sizes (under 40 ft. super.) | 2 3 | per ft. super. „ |
| 6 in. rubbed two sides ditto, ditto ..... | 2 6 | „ „ |
| 3 in. sawn two sides slabs (random sizes) | 0 11½ | „ „ |
| 2 in. to 2½ in. sawn one side slabs (random sizes) ..... | 0 7½ | „ „ |
| 1½ in. to 2 in. ditto, ditto | 0 6 | „ „ |
| HARD YORK— | | |
| Scappled random blocks | 3 0 | per ft. cube, „ |
| 6 in. sawn two sides, landings to sizes (under 40 ft. super.) | 2 8 | per ft. super. „ |
| 6 in. rubbed two sides ditto ..... | 3 0 | „ „ |
| 3 in. sawn two sides (slabs random sizes) | 1 2 | „ „ |
| 2 in. self-faced random flags ..... | 0 5 | „ „ |

STONE (*continued*).

| | s. d. | |
|---|---|---|
| HARD YORK (*continued*)— | | |
| Hopton Wood (Hard Bed) in blocks | 2 3 | per ft. cube. deld. rly. depôt. |
| „ „ „ 6 in. sawn both sides landings | 2 7 | per ft. super. deld. rly. depôt. |
| „ „ „ 3 in. do. | 1 2½ | „ „ |

### SLATES.

| in. in. | £ s. d. | |
|---|---|---|
| 20 × 10 best blue Bangor | 13 2 6 | per 1000 of 1200 at r. d. |
| 20 × 12 „ „ | 13 17 6 | „ „ |
| 20 × 10 first quality „ | 13 0 0 | „ „ |
| 20 × 12 „ „ „ | 13 15 0 | „ „ |
| 16 × 8 „ „ „ | 7 5 0 | „ „ |
| 20 × 10 best blue Portmadoc ..... | 12 12 6 | „ „ |
| 16 × 8 „ „ | 6 12 6 | „ „ |
| 20 × 10 best Eureka unfading green . | 15 17 6 | „ „ |
| 20 × 12 „ „ | 18 7 6 | „ „ |
| 18 × 10 „ „ | 13 5 0 | „ „ |
| 16 × 8 „ „ | 10 5 0 | „ „ |
| 20 × 10 permanent green | 11 12 6 | „ „ |
| 18 × 10 „ „ | 9 12 6 | „ „ |
| 16 × 8 „ „ | 6 12 6 | „ „ |

### TILES.

| | s. d. | |
|---|---|---|
| Best plain red roofing tiles . | 42 | 0 per 1000 at rly. depôt. |
| Hip and Valley tiles ... | 3 | 7 per doz. „ „ |
| Best Brosely tiles..... | 50 | 0 per 1000 „ „ |
| Do. Ornamental tiles ..... | 52 | 6 „ „ „ |
| Hip and Valley tiles ... | 4 | 0 per doz. „ „ |
| Best Ruabon red, brown, or brindled do. (Edwards) | 57 | 6 per 1000 „ „ |
| Do. Ornamental do ..... | 60 | 0 „ „ „ |
| Hip tiles ..... | 4 | 0 per doz. „ „ |
| Valley tiles ..... | 3 | 0 „ „ „ |
| Best Red or Mottled Staffordshire do. (Peakes)..... | 51 | 9 per 1000 „ „ |
| Do. Ornamental do..... | 54 | 6 „ „ „ |
| Hip tiles ..... | 4 | 1 per doz. „ „ |
| Valley tiles ..... | 3 | 8 „ „ „ |
| Best "Rosemary" brand plain tiles..... | 48 | 0 per 1000 „ „ |
| Best Ornamental tiles ..... | 50 | 0 „ „ „ |
| Hip tiles ..... | 4 | 0 per doz. „ „ |
| Valley tiles ..... | 3 | 8 „ „ „ |
| Best "Hartshill" brand plain tiles, sand faced. | 50 | 0 per 1000 „ „ |
| Do. pressed..... | 47 | 6 „ „ „ |
| Do. Ornamental do ..... | 50 | 0 „ „ „ |
| Hip tiles ..... | 4 | 0 per doz. „ „ |
| Valley tiles ..... | 3 | 6 „ „ „ |

### WOOD.

| | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in ..... | 15 10 0 | 16 10 0 |
| Deals: best 3 by 4..... | 14 10 0 | 15 10 0 |
| Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in. | 11 10 0 | 12 10 0 |
| Battens: best 2½ by 6 and 3 by 6 .. | 0 10 0 | less than 7 in. and 8 in. |
| Deals: seconds ..... | 1 0 0 | less than best |
| Battens: seconds ..... | 0 10 0 | „ „ „ |
| 2 in. by 4 in. and 2 in. by 6 in.... | 9 0 0 | 9 10 0 |
| 2 in. by 4½ in. and 2 in. by 5 in.... | 8 16 0 | 9 10 0 |
| Foreign Sawn Boards— | | |
| 1 in. and 1¼ in. by 7 in. ..... | 0 10 0 | more than battens. |
| ¾ in. ..... | 1 0 0 | „ |
| | At per load of 50 ft. | |
| Fir timber: best middling Danzig or Memel (average specification) | 4 10 0 | 5 0 0 |
| Seconds ..... | 4 5 0 | 4 10 0 |
| Small timber (8 in. to 10 in.) ... | 3 12 6 | 3 15 0 |
| Small timber (6 in. to 8 in.) ..... | 3 0 0 | 3 10 0 |
| Swedish balks ..... | 2 15 0 | 3 0 0 |
| Pitch-pine timber (30 ft. average) | 3 5 0 | 3 15 0 |

| JOINERS' WOOD. | At per standard. | |
|---|---|---|
| White Sea: first yellow deals, 3 in. by 11 in ..... | 23 0 0 | 24 0 0 |
| 3 in. by 9 in. ..... | 21 0 0 | 22 10 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 17 0 0 | 18 10 0 |
| Second yellow deals, 3 in by 11 in..... | 18 10 0 | 20 0 0 |
| „ „ 3 in. by 9 in. | 17 10 | 19 0 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 13 10 0 | 14 10 0 |
| Third yellow deals, 3 in. by 11 in. and 9 in. ..... | 15 10 0 | 16 10 0 |
| Battens, 2½ in. and 3 in. by 7 in. | 11 10 0 | 12 10 0 |
| Petersburg: first yellow deals, 3 in. by 11 in. ..... | 21 0 0 | 22 10 0 |
| Do. 3 in. by 9 in..... | 18 0 0 | 19 10 0 |
| Battens..... | 13 10 0 | 15 0 0 |
| Second yellow deals, 3 in. by 11 in. | 16 0 0 | 17 0 0 |
| Do. 3 in. by 9 in..... | 14 10 0 | 16 0 0 |
| Battens..... | 11 0 0 | 12 10 0 |
| Third yellow deals, 3 in. by 11 in. ..... | 13 10 0 | 14 0 0 |
| Do. 3 in. by 9 in..... | 13 0 0 | 14 0 0 |
| Battens..... | 10 0 0 | 11 0 0 |
| White Sea and Petersburg :— | | |
| First white deals, 3 in. by 11 in. | 14 10 0 | 15 10 0 |
| „ „ 3 in. by 9 in. | 13 10 0 | 14 10 0 |
| Battens ..... | 11 0 0 | 12 0 0 |
| Second white deals, 3 in. by 11 in. | 13 10 0 | 14 10 0 |
| „ „ 3 in. by 9 in. | 12 10 0 | 13 10 0 |
| „ „ battens ..... | 9 10 0 | 10 10 0 |
| Pitch-pine: deals..... ..... | 16 10 0 | 20 0 0 |
| Under 2 in. thick extra ..... | 0 10 0 | 1 0 0 |
| Yellow Pine—First, regular sizes | 40 0 0 | upwards. |
| Oddments ..... | 28 0 0 | „ |
| Seconds, regular sizes..... | 30 0 0 | „ |
| Yellow Pine oddments ..... | 25 0 0 | „ |
| Kauri Pine—Planks, per ft. cube . | 0 3 6 | 0 5 0 |
| Danzig and Stettin Oak Logs— | | |
| Large, per ft. cube ..... | 0 2 6 | 0 3 6 |
| Small „ „ ..... | 0 2 3 | 0 2 6 |
| Wainscot Oak Logs, per ft. cube. | 0 5 0 | 0 5 6 |
| Dry Wainscot Oak, per ft. sup. as inch ..... | 0 0 8 | 0 0 9 |
| ¾ in. do. do. ..... | 0 0 7 | — |

### WOOD (*continued*).

| JOINERS' WOOD (*continued*)— | At per standard. £ s. d. | £ s. d. |
|---|---|---|
| Dry Mahogany—Honduras, Tabasco, per ft. super. as inch | 0 0 9 | 0 1 0 |
| Selected, Figury, per ft. sup. as inch | 0 1 6 | 0 2 6 |
| Dry Walnut, American, per ft. sup. as inch | 0 0 10 | 0 1 0 |
| Teak, per load | 17 0 0 | 21 0 0 |
| American Whitewood Planks, per ft. cube | 0 4 0 | — |
| Prepared Flooring— | Per square. | |
| 1 in. by 7 in. yellow, planed and shot | 0 13 6 | 0 17 6 |
| 1 in. by 7 in. yellow, planed and matched | 0 14 0 | 0 18 0 |
| 1¼ in. by 7 in. yellow, planed and matched | 0 16 0 | 1 0 0 |
| 1 in. by 7 in. white, planed and shot | 0 12 0 | 0 14 6 |
| 1 in. by 7 in. white, planed and matched | 0 12 6 | 0 15 0 |
| 1¼ in. by 7 in. white, planed and matched | 0 15 0 | 0 16 6 |
| ¾ in. by 7 in. yellow, matched and beaded or V-jointed brds. | 0 11 0 | 0 13 6 |
| 1 in. by 7 in. do. do. | 0 14 0 | 0 18 0 |
| ¾ in. by 7 in. white do. do. | 0 10 0 | 0 11 6 |
| 1 in. by 7 in. do. do. do. | 0 11 6 | 0 13 6 |

6 in. at 6d. to 9d. per square less than 7 in.

### JOISTS, GIRDERS, &c.

| | In London, or delivered Railway Vans, per ton. £ s. d. | £ s. d. |
|---|---|---|
| Rolled Steel Joists, ordinary sections | 5 15 0 ... | 6 15 0 |
| Compound Girders, ordinary sections | 7 12 6 ... | 8 15 0 |
| Angles, Tees and Channels, ordinary sections | 7 7 6 ... | 8 7 6 |
| Flitch Plates | 7 15 0 ... | 8 5 0 |
| Cast Iron Columns and Stanchions including ordinary patterns | 6 12 6 ... | 7 15 0 |

### METALS.

| | Per ton, in London £ s. d. | £ s. d. |
|---|---|---|
| IRON— | | |
| Common Bars | 6 15 0 ... | 7 5 0 |
| Staffordshire Crown Bars, good merchant quality | 7 5 0 ... | 7 15 0 |
| Staffordshire "Marked Bars" | 9 10 0 ... | — |
| Mild Steel Bars | 8 5 0 ... | 8 15 0 |
| Hoop Iron, basis price | 8 15 0 ... | 9 0 0 |
| " " Galvanized | 16 10 0 ... | — |
| (*And upwards, according to size and gauge.) | | |
| Sheet Iron, Black— | | |
| Ordinary sizes to 20 g. | 9 0 0 ... | — |
| " " 24 g. | 10 0 0 ... | — |
| " " 26 g. | 11 15 0 ... | — |
| Sheet Iron, Galvanised, flat, ordinary quality— | | |
| Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g. | 12 0 0 ... | — |
| Ordinary sizes to 22 g. and 24 g. | 12 10 0 ... | — |
| " " 26 g. | 13 10 0 ... | — |
| Sheet Iron, Galvanised, flat, best quality— | | |
| Ordinary sizes to 20 g. | 15 0 0 ... | — |
| " " 22 g. and 24 g. | 15 10 0 ... | — |
| " " 26 g. | 17 0 0 ... | — |
| Galvanised Corrugated Sheets— | | |
| Ordinary sizes 6 ft. to 8 ft. 20 g. | 12 0 0 ... | — |
| " " 22 g. and 24 g. | 12 10 0 ... | — |
| " " 26 g. | 13 5 0 ... | — |
| Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker | 11 0 0 ... | — |
| Best Soft Steel Sheets, 22 g. & 24 g. | 12 0 0 ... | — |
| " " 26 g. | 13 5 0 ... | — |
| Cut nails, 3 in. to 6 in. | 8 10 0 ... | 9 0 0 |

(Under 3 in., usual trade extras.)

### LEAD, &c.

| | Per ton, in London. £ s. d. | £ s. d. |
|---|---|---|
| LEAD—Sheet, English, 3lb. and up | 15 10 0 ... | — |
| Pipe in coils | 16 0 0 ... | — |
| Soil pipe | 18 10 0 ... | — |
| Compo pipe | 18 10 0 ... | — |
| ZINC—Sheet— | | |
| Vieille Montagne ...ton | 30 10 0 ... | — |
| Silesian | 30 5 0 ... | — |
| COPPER— | | |
| Strong Sheet...per lb. | 0 0 10 ... | — |
| Thin " | 0 0 11 ... | — |
| Copper nails " | 0 0 10 ... | — |
| BRASS— | | |
| Strong Sheet " | 0 0 9½ ... | — |
| Thin " | 0 0 10 ... | — |
| TIN—English Ingots " | 0 1 4½ ... | — |
| SOLDER—Plumbers' " | 0 0 6½ ... | — |
| Tinmen's " | 0 0 8 ... | — |
| Blowpipe " | 0 0 9 ... | — |

### ENGLISH SHEET GLASS IN CRATES.

| | 21d. per ft. delivered. |
|---|---|
| 15 oz. thirds | 21d. per ft. delivered. |
| " fourths | 2d. " " |
| 21 oz. thirds | 2¾d. " " |
| " fourths | 3d. " " |
| 26 oz. thirds | 4¼d. " " |
| " fourths | 3¾d. " " |
| 32 oz. thirds | 5¾d. " " |
| " fourths | 5d. " " |
| Fluted Sheet, 15 oz. | 3¾d. " " |
| " 21 oz. | 4¼d. " " |
| ⅛ Hartley's Rolled Plate | 2d. " " |
| ¼ " " " | 2½d. " " |
| ¾ " " " | 2¾d. " " |

### OILS, &c.

| | | £ s. . |
|---|---|---|
| Raw Linseed Oil in pipes | per gallon | 0 1 5 |
| " " " in barrels | " | 0 1 6 |
| " " " in drums | " | 0 1 8 |
| Boiled " " in pipes | " | 0 1 7 |
| " " " in barrels | " | 0 1 8 |
| " " " in drums | " | 0 1 10 |
| Turpentine, in barrels | " | 0 3 4 |
| " in drums | " | 0 3 6 |
| Genuine Ground English White Lead | per ton | 19 15 0 |
| Red Lead, Dry | " | 19 5 0 |
| Best Linseed Oil Putty | per cwt. | 0 6 6 |
| Stockholm Tar | per barrel | 1 12 0 |

### VARNISHES, &c.

| | Per gallon. £ s. d. |
|---|---|
| Fine Pale Oak Varnish | 0 8 0 |
| Pale Copal Oak | 0 10 6 |
| Superfine Pale Elastic Oak | 0 12 6 |
| Fine Extra Hard Church Oak | 0 10 0 |
| Superfine Hard-drying Oak, for seats of Churches | 0 14 0 |
| Fine Elastic Carriage | 0 12 6 |
| Superfine Pale Elastic Carriage | 0 16 0 |
| Fine Pale Maple | 0 16 0 |
| Finest Pale Durable Copal | 0 18 0 |
| Extra Pale French Oil | 1 1 0 |
| Eggshell Flatting Varnish | 0 18 0 |
| White Copal Enamel | 1 4 0 |
| Extra Pale Paper | 0 12 0 |
| Best Japan Gold Size | 0 10 6 |
| Best Black Japan | 0 16 0 |
| Oak and Mahogany Stain | 0 9 0 |
| Brunswick Black | 0 8 6 |
| Berlin Black | 0 16 0 |
| Knotting | 0 10 0 |
| French and Brush Polish | 0 10 0 |


### TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to J. MORGAN) should be addressed to the Publisher of "THE BUILDER," Catherine-street, W.C.

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## TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ACTON.—For erecting the Southfield-road School to accommodate 1,139 children, with covered play-ground, etc., Bedford Park, W., for Acton Urban District Council. Messrs. E. C. P. & H. Monson, architects, Grosvenor House, Acton Vale, W.; quantities by Mr. F. T. W. Miller, 8, Dartmouth-street, S.W.:—

| | | | |
|---|---|---|---|
| Wm. Willett | £24,475 | Patman & Fotheringham | £22,973 |
| Foster Bros. | 24,444 | Spencer, Santo, & Co. | 22,950 |
| Stimpson & Co. | 24,400 | E. Wall | 22,860 |
| Braid, Pater, & Co. | 24,200 | Knight & Son | 22,773 |
| Godson & Sons | 23,925 | J. & M. Patrick | 22,525 |
| Gough & Co. | 23,894 | Willcock & Co. | 22,500 |
| Myall & Upson | 23,850 | B. & E. Nightingale | 22,495 |
| Miskin & Sons | 23,800 | G. H. Gibson | 22,445 |
| T. Bendon | 23,750 | C. Wall, Ltd. | 22,350 |
| F. & E. Davey, Ltd. | 23,678 | A. N. Coles | 22,300 |
| Treasure & Son | 23,631 | H. Flint | 22,167 |
| R. L. Tonge | 23,400 | Galbraith Bros. | 22,090 |
| W. J. Renshaw | 23,393 | C. G. Hill | 21,995 |
| Ford & Walton | 23,365 | J. Parsons | 21,747 |
| Wisdom Bros. | 23,350 | Hudson & Co., Westminster, S.W.† | 21,725 |
| Denne & Son | 23,240 | | |
| Martin, Wells, & Co. | 23,200 | | |
| Ferguson & Co. | 23,080 | | |
| Ward & Son | 23,000 | | |

[Architects' estimate, £23,600.]

ALTRINCHAM.—For Navigation-road Council Schools, for the Cheshire County Council. Mr. W. Owen, architect, Clarence-street, Manchester. Quantities by Mr. W. Windsor, Brown-street, Manchester:—

| | | | |
|---|---|---|---|
| Watson & Co. | £14,016 8 8 | Burgess & Gall | £12,140 0 0 |
| S. Hodgkiss | 13,577 0 0 | Gerrard & Sons | 12,040 0 0 |
| Southern & Sons | 13,490 0 0 | R. Carlyle | 11,698 0 0 |
| T. & W. Meadows | 12,821 0 0 | Clayton Bros. | 11,460 0 0 |
| J. Byrom | 12,638 0 0 | W. Thorpe, Old Trafford, Manchester. | 11,278 0 0 |
| M. Stone | 12,500 0 0 | | |
| Hamilton & Son | 12,387 0 0 | | |

BARNES (Surrey).—For alterations and enlargement of the parish church. Mr. Charles Innes, architect, 50, Cannon-street, E.C.:—

| | | | |
|---|---|---|---|
| Colls & Sons | £6,480 | Dorey & Co | £5,788 |
| Barrett & Power | 6,336 | Soole & Sons | 5,353 |
| Dove Bros. | 5,945 | W. J. Renshaw | 5,297 |
| E. Lawrence & Sons | 5,910 | B. E. Nightingale | 5,242 |
| F. G. Minter | 5,885 | Macey & Sons | 5,160 |
| Prestige & Co. | 5,851 | Adamson & Sons | 4,985 |

CHEVELEY.—For the erection of a residence at Cheveley, near Newmarket, Cambridgeshire, for Mr. S. W. Graystone. Mr. H. Steward-Watling, F.S.A., architect (Arthur Rutter & Sons), Bury St. Edmunds:—

Frederick Tooke, Bury St. Edmunds* .... £2,849

EASTBOURNE.—For erecting a new elementary school near East-street, for the Corporation (Local Education Authority), to accommodate 610 (305 boys and 305 girls). Mr. F. G. Cooke, A.M.I.C.E., architect, 2, Hyde-gardens, Eastbourne. Quantities by Messrs. Mitchell & Ford, 7, Gildridge-road, Eastbourne:—

| | | | |
|---|---|---|---|
| E. Cornwell & Son | £7,384 0 0 | Strange & Sons | £6,546 0 0 |
| Thos. Salter | 6,974 6 6 | J. Bodle | 6,450 0 0 |
| J. Longley & Co. | 6,960 0 0 | W. A. Field & Co. | 6,334 0 0 |
| J. White | 6,930 0 0 | A. W. King & Son | 6,109 5 0 |
| J. Wood & Son | 6,870 0 0 | Miller & Selmes | 6,065 0 0 |
| M. Hookham | 6,803 0 0 | J. Martin | 5,998 5 0 |
| Sattin & Evershed | 6,775 0 0 | C. Peerless Dennis, & Co., Eastbourne* | 5,985 10 0 |
| F. G. Minter | 6,728 0 0 | | |
| J. Smith & Son | 6,550 0 0 | | |

[The architect's estimate was £6,015.]

EDMONTON.—For erecting new stores in Silver-street, for the Edmonton Co-operative Society. Mr. H. Seymour Couchman, architect, 16, Pembury-road, Tottenham:—

| | First design. | Second design. |
|---|---|---|
| A. Porter | £1,879 | — |
| Knight & Son | 1,857 | — |
| General Builders, Ltd. | 1,779 | — |
| Fairhead & Son | 1,729 | £1,133 |
| A. Monk | 1,692 | 1,100 |
| J. Groves, Forster-road, Tottenham* | 1,574 | 1,094 |

ELMSWELL.—For the erection of a block of semi-detached and detached houses at Elmswell, Suffolk. Mr. H. Steward-Watling, F.S.A., architect (Arthur Rutter & Sons), Bury St. Edmunds:—

Oak Building Company, Cambridge* ....£965

HAMMERSMITH.—For constructing an underground sanitary convenience at Paddenswick-road, for the Borough Council. Mr. H. Mair, Borough Surveyor, Town Hall, Broadway, Hammersmith:—

| | | | |
|---|---|---|---|
| General Builders, Ltd. | £2,278 0 0 | Wisdom Bros. | £1,935 0 0 |
| Doulton & Co., Ltd. | 2,167 0 0 | F. Bryan | 1,920 14 9 |
| J. Baker & Son | 2,081 0 0 | E. H. Jackson | 1,918 5 8 |
| W. J. Renshaw | 2,041 0 0 | A. C. Heywood | 1,896 0 0 |
| H. & F. Fearman | 2,037 9 7 | S. Polden | 1,870 0 0 |
| W. Gladding & Co. | 2,035 0 0 | Spencer, Santo, & Co., Ltd. | 1,850 0 0 |
| G. Wimpey & Co. | 2,010 0 0 | J. Parsons | 1,829 0 0 |
| G. Jennings, Ltd. | 1,986 14 10 | C. Cruse & Co. | 1,826 0 0 |
| J. F. Halliday | 1,971 0 0 | B. E. Nightingale | 1,825 0 0 |
| | | J. Shelbourne & Co. | 1,822 0 0 |
| | | M. Wells & Co., Ltd. | 1,815 0 0 |
| | | H. Dakin & Co. | 1,800 0 0 |
| | | C. Dearing & Son | 1,784 15 7 |

LACKFORD.—For the erection of a reading-room at Lackford, Suffolk, for Rev. J. H. Holden. Mr. H. Steward-Watling, F.S.A., architect (Arthur Rutter & Sons), Bury St. Edmunds:—

H. Brewer, Felsham, Suffolk* ..... £200

LIVERPOOL.—For erecting new Northern district post-office, for the Commissioners of H.M. Works and Public Buildings:—

| | | Credit. |
|---|---|---|
| Jones & Sons | £7,995 0 | — |
| W. Musker | 7,976 0 | £98 |
| G. Wooda & Sons | 7,953 0 | 120 |
| J. Merritt | 7,823 13 | 50 |
| W. Thornton & Sons | 7,775 0 | 100 |
| Morrison & Sons | 7,520 0 | 25 |
| G. L. Desoer | 7,462 0 | 100 |
| T. Spencer | 7,300 0 | 200 |
| S. Fowler | 7,289 0 | 90 |
| Brown & Backhouse | 7,262 0 | — |
| R. Wearing & Sons | 7,233 0 | — |
| J. Paterson & Sons | 7,137 0 | 150 |
| R. Costain & Sons‡ | 7,094 0 | 125 |
| J. & G. Chappell | 7,028 0 | 200 |
| H. Kelly & Bros. | 6,997 0 | 125 |
| G. Parker & Son | 6,957 0 | 150 |
| I. Dilworth* | 6,800 0 | 350 |
| Bullen Bros. & Co. | 6,598 0 | 18 |

‡ Includes £100 for extra measurement labour on stonework.

LONDON.—For the supply and fixing of 70 Mason's patent side entrance covers to sewers, for the Corporation of the City of London:—

J. Mowlem & Co.* ..... £400

LONDON.—For road-making, kerbing, paving, etc., Lawrence's-buildings, Brooke-road, Stoke Newington Common, for the Hackney Borough Council. Mr. Norman Scorgie, Borough Engineer and Surveyor, Town Hall, Hackney:—

| | | | |
|---|---|---|---|
| G. J. Anderson | £490 10 3 | T. Adams | £431 10 7 |
| W. Manders | 480 3 2 | G. Porter, 2, Arthur-st., Well-street, Hackney, N.E.* | 427 18 8 |
| Grounds & Newton | 459 15 10 | | |
| J. Jackson | 442 4 4 | | |
| W. Griffiths & Co., Ltd. | 432 6 11 | | |

LONDON.—For new entrance and floor, etc., to ladies' first-class swimming bath at the Public Baths, Prince of Wales-road, Kentish Town, N.W., for the St. Pancras Borough Council. Mr. T. W. Aldwinckle, architect, 20, Denman-street, London Bridge, S.E.:—

| | | | |
|---|---|---|---|
| T. E. Mitchell | £423 5 0 | C. Wall, Ltd. | £277 0 0 |
| W. Lawrence & Son | 346 0 0 | T. Pearce | 253 17 6 |
| F. H. Pearse | 328 0 0 | W. Reason | 252 10 0 |
| Marchant & Hirst | 322 0 0 | Cruse & Baldwin | 251 10 0 |
| W. Johnson & Co., Ltd. | 311 0 0 | J. W. Aldridge & Son, Willesden Green, N.W.* | 241 0 0 |
| Spencer, Santo, & Co., Ltd. | 290 0 0 | | |

LONDON.—For the supply and fixing of a further number of hydrant indicator tablets of enamelled iron, for the London County Council:—

| | Square single tablets. Each. s. d. | Oval single tablets. Each. s. d. | Double or corner tablets. Each. s. d. |
|---|---|---|---|
| Patent Letter & Enamel Co. | 0 3 | 0 3½ | 0 4½ |
| Patent Enamel Co., Ltd. | 1 4 | 1 6 | 1 7½ |
| S. Pontifex & Co, 17, Coleman-street, E.C.* | 1 6 | 1 6 | 2 0 |
| Willing & Co., Ltd. | 1 6 | 1 7½ | 1 9 |
| Falkirk Iron Co. | 2 0 | 2 1 | 2 6 |
| Garnier & Co. | 2 3 | 2 6 | 2 9 |
| Orme, Evans, & Co., Ltd. | 2 6 | 2 9 | 3 0 |
| Parsons & Wills | 3 0 | 3 0 | 3 6 |
| Ralph & Jordan | 3 0 | 3 0 | 3 6 |
| M. Wilson & Co. | 3 6 | 3 7 | 3 8 |

TENDERS.—*Continued on page* 591.

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

*(For some Contracts, &c., still open, but not included in this List, see previous issues.)*

## COMPETITIONS.

| Nature of Work. | By whom Required. | Premiums. | Designs to be Delivered |
|---|---|---|---|
| *Proposed Northumberland War Memorial ..... | Committee ..... | Not stated ..... | No date. |

## CONTRACTS.

| Nature of Work or Materials. | By whom Advertised. | Forms of Tenders, etc., supplied by | Tenders to be Delivered |
|---|---|---|---|
| *Alterations, etc., to Parochial Schools, Garnford .. | ..... | Clark & Moscrop, Architects, Feethams, Darlington ..... | Dec. 3 |
| Vans, Lorries, Lamps, etc. ..... | Manchester Tramways Committee | J. M. M'Elroy, Manager, Tramways Department, Manchester.... | Dec. 5 |
| Draining, Paving, etc., Streets, Bradford ..... | Manchester Paving, etc., Committee | Paving, etc., Department, Town Hall, Manchester..... | do. |
| Draining, Paving, etc., Streets, Ardwick ..... | do | do. | do. |
| Sewering, etc., Streets, Openshaw ..... | do. | do. | do. |
| Draining, etc., Streets, Rusholme ..... | do. | do. | do. |
| Sewering, etc., Streets, Newton Detached..... | do. | do. | do. |
| Sewering, etc., Streets, Newton Heath ..... | do. | do. | do. |
| Drainage, etc., Morton ..... | do. | do. | do. |
| Electric Lighting, etc., Dennistoun District Library | Glasgow Corporation ..... | J. R. Rhind, Architect, 67, Hope-street, Glasgow ..... | do. |
| Stores ..... | Trimdon Grange Collieries ..... | Storekeeper, Trimdon Grange Colliery, co. Durham ..... | do. |
| Street Improvements..... | Stockton-on-Tees Corporation .... | M. H. Sykes, Borough Surveyor, Town Hall, Stockton..... | do. |
| Improvements, Back Eldon-place ..... | Halifax Highways Committee .... | J. Lord, Borough Engineer, Town Hall, Halifax ..... | do. |
| Alterations to Mitre Hotel, Market-street..... | Halifax Improvement Committee .. | do. | do. |
| Buildings at Corporation Store Yard, Mill-road .... | Cambridge Town Council ..... | Borough Surveyor, Guildhall, Cambridge ..... | do. |
| 240 Mild Steel Tubes..... | Warrington Sanitary Committee .. | Manager, Longford Depôt, Warrington..... | do. |
| Works at Fire Station ..... | Beckenham U.D.C. ..... | J. A. Angell, Surveyor, U.D.C. Offices, Beckenham ..... | do. |
| Wood Ceiling, etc., at First Presbyterian Ch., Bangor | ..... | Young & Mackenzie, Archs., Scottish Provident Buildings, Belfast | do. |
| Painting, etc., Bath-lane School..... | Newcastle-on-Tyne Education Com. | A. Goddard, Sec., Edu. Offices, Northumberland-rd., N.-on-Tyne | Dec. 6 |
| Additions to Uckfield National School ..... | The Managers ..... | Maiden's Head Hotel, Uckfield ..... | do. |
| Street Works ..... | Shrewsbury Improvement Com. .. | H. C. Eddowes, Borough Surveyor, The Square, Shrewsbury .... | do. |
| Two Concrete Sites, Bagnall Smallpox Hospital .... | N. Staffordshire Hospital Board .. | E. Jones, Architect, 10, Albion-street, Hanley ..... | do. |
| Laundry Machinery and Plant..... | do. | do. | do. |
| Painters' Work at Exten. of Electric Light Station | Edinburgh Corporation ..... | R. Morham, City Architect, City Chambers, Edinburgh ..... | do. |
| Private Street Works, Armley and Bramley ..... | Leeds Corporation ..... | City Engineer, Municipal Buildings, Leeds ..... | do. |
| Cotchill Sewer..... | Carlisle R.D.C. ..... | Sanitary Surveyor, 7, Victoria-place, Carlisle ..... | do |
| Sewer, Stranmillis-road..... | Belfast Improvement Committee .. | City Surveyor's Office, Belfast ..... | do. |
| Sewering, Paving, etc., of New Streets ..... | do. | do. | do. |
| *Sinking Well and Borehole, etc., at New Baths .... | Tottenham U.D.C. ..... | Council's Clerk, Council's Offices, 712, High-road, Tottenham, N. | do. |
| Scavenging ..... | Hale U.D.C. ..... | Inspector of Nuisances, Council Offices, Ashley-road, Hale ..... | Dec. 7 |
| Entrance Gates at Sewage Works, Bramley..... | Hambledon R.D.C. ..... | E. L. Lunn, Architect, 36, High-street, Guildford ..... | do. |
| Spring Steel..... | East Indian Railway Co. ..... | C. W. Young, Secretary, Nicholas-lane, London, E.C. ..... | do. |
| Library, Leeds-road, Shipley ..... | Shipley U.D.C. ..... | Abm. Sharp, Arch., Pearl Assurance Buildings, Market-st., Bradford | do. |
| Four Shops, etc., Cliff-st. and Cross-st., Bridlington | Whitaker Bros. ..... | S. Dyer, Architect, Quay-road, Bridlington..... | do. |
| 20 Fathoms best Yellow Deal Ends, Edgware ..... | Hendon Guardians ..... | F. J. Seabrook, Clerk Union Offices, Edgware ..... | do. |
| Scavenging ..... | Whickham U.D.C. ..... | J. B. Renton, Surveyor, Council Offices, Whickham ..... | do. |
| Plumbers' and Glaziers' Work ..... | Sheffield Education Committee.... | Office of Committee, Leopold-street, Sheffield..... | Dec. 8 |
| Chapel, Lecture Hall, etc., at Gilfach, Pengam .... | English Calvinistic Methodists .... | W. Harris, Architect, Gilfach, Pengam..... | do. |
| Erecting Cactus-houses, etc., Alexandra Park ..... | Manchester Parks Committee .... | City Architect, Town Hall, Manchester..... | do. |
| Sewerage Works, Fordhouses, near Wolverhampton.. | Cannock R.D.C. ..... | H. M. Whitehead, Engineer, Penkridge, Stafford ..... | do. |
| Girder Bridges (Three 100-ft. spans) ..... | Burma Railways Co..... | Offices of Company, 76, Gresham House, Old Broad-street, E.C.. | do. |
| Girder Bridges (Two 100-ft. spans)..... | do. | do. | do. |
| Tools and Stores..... | do. | do. | do. |
| Flood Works at Saltley..... | Birmingham Public Works Comtee. | J. Price, City Surveyor, Council House, Birmingham ..... | do. |
| Concrete Bridges on the Hennebique System ..... | do. | do. | do. |
| Central Fire Station, Great Brunswick-street ..... | Dublin Waterworks Committee .... | City Architect, Municipal Buildings, Cork Hill, Dublin ..... | do. |
| Stores and Materials ..... | Nottingham Works and Ways Com. | A. Brown, City Engineer, Nottingham..... | do. |
| Street Works ..... | Hebburn U.D.C. ..... | H. Paterson, Surveyor, Argyle-street, Hebburn ..... | do. |
| *Making-up Roads, etc. ..... | Ealing Town Council ..... | Borough Engineer, Town Hall, Ealing, W. ..... | do. |
| Thin Zinc Plates ..... | Director-General, Ordnance Survey | Officer in Charge of Stores, Ordnance Survey Office, Southampton | Dec. 9 |
| Warehouse, Aultmore Distillery, Forgie..... | ..... | C. C. Doig, Architect, Elgin..... | do. |
| Sewering, Paving, etc., of North Walls..... | Hull Corporation ..... | A. E. White, City Engineer, Town Hall, Hull ..... | do. |
| *Additions, etc., Coastguard Bldgs., Woodbridge Haven | Admiralty ..... | Director of Works Department, 21, Northumberland-avenue, W.C. | do. |
| Paving and Flagging Streets ..... | Leeds Corporation ..... | City Engineer's Office, Municipal Buildings, Leeds..... | Dec. 10 |
| Police Station at Cwmgore ..... | Glamorgan Quarter Sessions ..... | Clerk to Glamorgan County Council, Westgate-street, Cardiff .... | do. |
| Police Station at Seven Sisters ..... | do. | do. | do. |
| *Re-making Roads, etc., Dartford, Kent..... | Metropolitan Asylums Board..... | Office of the Board, Embankment, E.C. ..... | do. |
| *New Store Accommodation at School, Swanley .... | do. | do. | do. |
| *Erection of Electrical Traveller ..... | Mr. B. E. Nightingale ..... | ..... | do. |
| Private Street Works, Margaret-street, Abercynon.. | Mountain Ash U.D.C. ..... | W. G. Thomas, Surveyor, Council Offices, Mountain Ash..... | Dec. 12 |
| Painting Schools..... | Salford Education Committee .... | Director of Education, Education Office, Chapel-street, Salford .. | do. |
| Purifying Plant House ..... | Edin. & Leith Gas Commissioners.. | W. R. Herring, C.E., New Street Works, Edinburgh..... | do. |
| Purifying Plant ..... | do. | do. | do. |
| Fire Station, Stables, Cart Shed, etc..... | Crewe Town Council ..... | G. Eaton-Shore, Borough Surveyor, Heath-street, Crewe ..... | do. |
| Stores ..... | Powell Duffryn Steam Coal Co., Ltd. | Stores Manager, Aberaman Offices, near Aberdare..... | do. |
| Teachers' Rooms, Abermorlais School ..... | Merthyr Tydfil Education Comm.. | Education Committee, Town Hall, Merthyr Tydfil..... | do. |
| Altering Fireplaces, etc., Boys' Department, ditto .. | do. | do. | do. |
| New Latrines and Repaving Yard, Dowlais School.. | do. | do. | do. |
| Materials ..... | Worcester Corporation ..... | T. Caink, City Engineer, Guildhall, Worcester ..... | do. |
| Footbridge over River Quaggy, High-street..... | Lewisham Borough Council.. .... | Surveyor's Department, Town Hall, Catford ..... | do. |
| Road Works, Sydenham and Forest Hill ..... | do. | do. | do. |
| 4,000 tons of Granite Setts ..... | Rochdale Tramways Committee .. | S. S. Platt, Borough Engineer, Town Hall, Rochdale ..... | do. |
| 500 tons of Broken Limestone ..... | Baildon U.D.C. ..... | J. Bentley, Clerk, Baildon ..... | do. |
| 600 tons of Broken Threlkeld Granite ..... | do. | do. | do. |
| Vicarage House at Ynishir, Porth ..... | Rev. S. Jones..... | J. W. Rodger, 14, High-street, Cardiff ..... | do. |
| *Wood and Corrugated Iron Fire-escape Shed ..... | Hendon U.D.C. ..... | Council's Engineer, Council's Office, Hendon ..... | do. |
| *Demolishing and Rebuilding Warehouse ..... | Central London Sick Asylum Dis. | A. A. Kekwick, 18, Outer Temple, W.C. ..... | do. |
| Seven Cast-Iron Water Tanks, Elec. Stn., Greenwich | London C.C. ..... | County Hall, Spring-gardens, S.W. ..... | Dec. 13 |
| General Stores..... | South Indian Railway Company .. | Office of Company, 55, Gracechurch-street, London, E.C. ..... | do. |
| Locomotive Stores..... | do. | do. | do. |
| Roofing (Five Spans of 100 ft. by 25 ft.) ..... | do. | do. | do. |
| 60 tons of Fencing..... | do. | do. | do. |
| Twenty Labourers' Cottages ..... | Castlecomer R.D.C. ..... | T. Mahony, Clerk, District Council Offices, Castlecomer, Ireland.. | do. |
| Surface-water Drain (North-road) ..... | Southall-Norwood U.D.C. ..... | R. Brown, Engineer & Surveyor, Public Offices, Southall ..... | do. |
| Sewer and Drain, Dormers Wells-lane ..... | do. | do. | do. |
| Sewer and Drain, Western-road ..... | do. | do. | do. |
| Making-up roads..... | Hampton U.D.C. ..... | S. H. Chambers, Surveyor, Public Offices, Hampton, Middlesex.. | do. |
| Iron Pipes ..... | Hastings Corporation ..... | P. H. Palmer, Waterworks Engineer, Town Hall, Hastings..... | do. |
| Iron Churchyard Fence, Hetton-le-Hole ..... | Hetton U.D.C. ..... | J. Harding, Surveyor, Township Offices, Hetton-le-Hole..... | do. |
| *New Fire Mains, Chimney Shaft, Boiler, etc. ..... | Kent County Lunatic Asylum .... | W. J. Jennings, Architect, 4, St. Margaret's-street, Canterbury.. | do. |
| Electric Lighting, Morningside-road Library..... | Edinburgh Corporation ..... | F. A. Newington, Electricity Supply Station, Dewar-pl., Edinburgh | Dec. 14 |
| Alterations, etc., to Crown Post Office, Roscrea .... | Board of Public Works ..... | O. Williams, Clerk of Works, Post Office, Limerick ..... | do. |
| Fire Engine Station and Depôt ..... | Atherton U.D.C. ..... | F. H. Grimshaw, Surveyor, Town Hall, Atherton ..... | do. |
| Stores, etc. ..... | Macclesfield Corporation ..... | C. W. Stubbs, Borough Surveyor, Macclesfield ..... | do. |
| Electric Lighting part of Workhouse Premises .... | Stoke-upon-Trent Guardians ..... | C. Daniel, Clerk, Union Offices, Stoke-upon-Trent..... | do. |
| *Boat Shed and Workshops, Rotherhithe ..... | Metropolitan Asylums Board..... | Office of the Board, Embankment, E.C. ..... | do. |
| *Annual Contracts ..... | House Committee, Guy's Hospital | Superintendent, Guy's Hospital, S.E. ..... | Dec. 15 |
| *New Coastguard Buildings at Stubbington, Hants .. | Admiralty ..... | Superintending Engineer, H.M. Dockyard, Portsmouth ..... | Dec. 16 |
| *Enlargement of Post Office at Wisbech..... | H.M. Works ..... | H.M. Office of Works, Storey's Gate, S.W. ..... | do. |

## CONTRACTS.—*Continued.*

| Nature of Work or Materials. | By whom Advertised. | Forms of Tender, etc., suppl ed by | Tenders to be Delivered |
|---|---|---|---|
| Stores | Bradford Corporation | Tramway Offices, 15, Bridge-street, Bradford | Dec. 17 |
| Materials | Kent Bridges & Roads Committee | County Surveyor, Maidstone | do. |
| *Erection of Branch Library, Brockley | Lewisham Borough Council | A. L. Guy, 4, Verulam-buildings, Gray's-inn | do. |
| Boathouse and Pavilion at Glasgow Green | Glasgow Corporation | Office of Public Works, City-chambers, Glasgow | Dec. 19 |
| Laying Main between Porth and Pontypridd | Pontypridd Waterworks Co. | Manager's Office, 28, Gelliwasted-road, Pontypridd | do. |
| Sanitary Towers, etc., at Workhouse, Tranmere | Birkenhead Guardians | E. Kirby, F.R.I.B.A., 5, Cook-street, Liverpool | do. |
| 58 Houses & Two Shops, Cwmneol Estate, Cwmaman | Aberneol Building Co., Ltd. | J. Llewellin, Smith, & Davies, Architects, Aberdare | do. |
| Detached Residence, Alford, Lincs. | ..... | W. Mortimer & Son, Architects, Corporation-street, Lincoln | Dec. 20 |
| Alterations, etc., Coedpenman School | Pontypridd U.D.C. | P. R. A. Willoughby, Surveyor, Pontypridd | do. |
| Engines and Pumps (Sewage Disposal, Contract II.) | Welwyn R.D.C. | H. Walker & Son, Engineers, Albion-chbrs., King-st., Nottingham | Dec. 21 |
| Extension of Cemetery, Uttoxeter | Joint Burial Board Committee | F. S. Hawthorn, Solicitor, Uttoxeter | do. |
| Team Labour, Stone Carting and Road Watering | Maidstone R.D.C. | M. C. Warne, Surveyor, Barming, Maidstone | do. |
| Underground Conveniences, Great Dover-street | Southwark Borough Council | A. Harrison, Borough Engineer, Town Hall, Walworth-road, S.E. | do. |
| *Road and Sewer Works | Barnet R.D.C. | Council's Surveyor, 14A, Mount-view, High Barnet | do. |
| 100 Electric Motor Equipments and Spare Parts | Glasgow Corporation | J. Dalrymple, 102, Renfield-street, Glasgow | Dec. 22 |
| *Head Post Office at Weymouth | H.M. Works | H.M. Office of Works, Storey's Gate, S.W. | do. |
| Free Library, Wombwell | Wombwell U.D.C. | A. B. Linford, Architect, Carlton Villa, Wombwell | Dec. 24 |
| Stables, Cart Sheds, etc., at Home Park Depôt | Lewisham Borough Council | Surveyor's Department, Town Hall, Catford | Dec. 28 |
| Sewerage Works, Wigmore | Wigmore R.D.C. | Willcox & Raikes, Engineers, 63, Temple-row, Birmingham | Dec. 31 |
| *New Board-room and General Offices | River Wear Commissioners | Henderson & Hall, Architects, 28, John-street, Sunderland | Jan. 4-05 |
| Town Hall, Ossett | Ossett Corporation | W. Hanstock & Son, Architects, Branch-road, Batley | No date |
| Ironwork for Drainage Works, Johannesburg | ..... | E. W. Carling & Co., St. Dunstan's-bldgs., St. Dunstan's-hill, Ldn. | do. |
| Ironwks. (Roofing 2 Sheds, Inverkeithing Paper Wks.) | ..... | Mr. Houston, Architect, St. Margaret-street, Dunfermline | do. |
| 3,000 tons of Portland Cement | ..... | Preston Granite Concrete Co., Ltd., The Docks, Preston | do. |
| Stone for Roads | Northumberland C.C. | County Surveyor, Moot Hall, Newcastle-on-Tyne | do. |
| *Seven Villas, Willenhall Park Estate | London and Dis. Land, etc., Co., Ltd. | Company's Offices, 9, Great Castle-street, W. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Applications to be in |
|---|---|---|---|
| *Leading Foremen (Three) | Manchester Corporation | £3 3s. per week each | Dec. 7 |
| *Assistant in Surveyor's Branch | London C.C. | £250 per annum | Dec. 15 |

*Those marked with an asterisk (*) are advertised in this number.* *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xix.

TENDERS.—*Continued from page* 589.

### LONDON BOARD OF EDUCATION TENDERS.

*Hackney, C., Sigdon-road (for heating apparatus in connexion with enlargement).*

| | | | |
|---|---|---|---|
| R. Clarke | £99 12 0 | J. Richmond & Co., Ltd. | £63 8 6 |
| J. Grundy | 97 0 0 | W. G. Cannon & Sons, 107, London-road, Southwark* | 59 15 0 |
| G. & E. Bradley | 71 0 0 | | |
| J. & F. May | 66 0 0 | | |
| Stevens & Sons | 65 0 0 | | |

FOR CLEANING SCHOOLS DURING THE CHRISTMAS HOLIDAYS, 1904:—

*Battersea, Shillington-street (Special, blind and manual training centre).*

| | | | |
|---|---|---|---|
| R. A. Jewell | £116 | E. Flood | £85 |
| J. & M. Patrick | 107 | Hudson Bros. | 81 |
| Martin, Wells & Co., Ltd. | 93 | W. Johnson & Co., Ltd., Wandsworth-Common* | 75 |
| E. B. Tucker | 89 | | |

*Bermondsey, Page's-walk.*

| | | | |
|---|---|---|---|
| E. P. Bulled & Co. | £242 0 | Lathey Bros. | £197 0 |
| H. Leney & Son | 237 19 | H. J. Williams, 81, Gt. Dover-st., Borough* | 191 10 |
| Rice & Son | 232 0 | | |
| W. Sayer & Son | 225 0 | | |

*Camberwell, N., Leipsic-road.*

| | | | |
|---|---|---|---|
| E. B. Tucker | £289 0 | J. F. Ford | £235 10 |
| W. V. Goad | 280 0 | Maxwell Bros., Ltd. | 229 0 |
| H. Line | 275 0 | W. Read, 43, Church-road, Brixton* | 197 0 |
| W. Sayer & Son | 246 0 | | |
| E. Triggs | 240 0 | | |
| Holliday & Greenwood, Ltd. | 239 0 | | |

*Fulham, Star-lane.*

| | | | |
|---|---|---|---|
| Thompson & Beveridge | £233 0 | Bristow & Eatwell | £167 0 |
| Holloway Bros. (London), Ltd. | 197 0 | Spencer, Santo, & Co., Ltd., 259, Warwick-road, Kensington* | 109 0 |
| S. Polden | 189 0 | | |
| W. R. & A. Hide | 185 10 | | |

*Hoxton, Chatham-gardens.*

| | | | |
|---|---|---|---|
| H. Runham Brown | £355 0 | Barrett & Power | £120 0 |
| Vigor & Co. | 154 0 | C. Dearing & Son, 61, Halliford-st., Islington* | 89 0 |
| H. Bouneau | 141 0 | | |
| Stevens Bros | 128 12 | | |

*Kennington, Kennington-road (painting interior of new portion and cleaning interior of old portion).*

| | | | |
|---|---|---|---|
| T. J. Green | £431 | Rice & Sons | £292 |
| W. King & Sons | 375 | J. Appleby & Sons | 289 |
| G. Brittain | 330 | Holliday & Greenwood, Ltd. | 287 |
| Martin, Wells, & Co., Ltd. | 320 | J. Garrett & Son, 17, Balham-hill* | 258 |
| J. & M. Patrick | 319 | | |

*Kennington, "Springfield."*

| | | | |
|---|---|---|---|
| J. R. Sims | £269 | E. Triggs | £199 |
| Maxwell Bros., Ltd. | 220 | E. P. Bulled & Co. | 185 |
| Rice & Son | 212 | E. Flood | 180 |
| W. Johnson & Co., Ltd. | 207 | J. Garrett & Son, 17, Balham-hill* | 170 |

*Kensington, S., Gloucester-grove, East.*

| | | | |
|---|---|---|---|
| Charles Wall, Ltd. | £345 | Spencer, Santo, & Co., Ltd., 259, Warwick-road, Kensington* | £158 |
| S. Polden | 220 | | |
| E. Flood | 218 | | |
| Holloway Bros. (London), Ltd. | 201 | | |

*Lambeth, N., Walnut Tree-walk.*

| | | | |
|---|---|---|---|
| W. King & Son | £320 0 | J. F. Ford | £162 18 |
| J. R. Sims | 288 0 | W. Smith & Son, Eldon Works, Harleyford-rd., Kennington* | 157 0 |
| W. Hornett | 220 10 | | |
| G. Brittain | 198 0 | | |
| J. Appleby & Sons | 197 0 | | |

*Limehouse, Northey-street (Infants' department and manual training centre).*

| | | | |
|---|---|---|---|
| J. F. Holliday | £126 10 | T. S. Elkington & Sons | £77 4 |
| W. Shurmur & Sons, Ltd. | 108 0 | Vigor & Co. | 77 0 |
| R. Woollaston & Co. | 89 0 | J. Dolman & Co., 1, Ellerthorpe-st., Poplar* | 65 0 |
| J. Haydon & Sons | 83 0 | | |

*Rotherhithe, Silwood-street.*

| | | | |
|---|---|---|---|
| W. Sayer & Son | £304 0 0 | J. C. Chalkley | £190 0 0 |
| J. Harries & Co. | 232 0 0 | Holliday & Greenwood, Ltd., Brixton* | 177 0 0 |
| H. Groves | 227 0 0 | | |
| W. Banks | 219 18 6 | | |
| W. J. Howie | 210 0 0 | | |

*St. George-in-the-East, Lower Chapman-street.*

| | | | |
|---|---|---|---|
| J. F. Holliday | £331 0 0 | R. Woollaston Bros. | £265 0 0 |
| Vigor & Co. | 284 10 0 | T. S. Elkington & Sons | 259 14 6 |
| Woollaston Bros. | 270 0 0 | J. Dolman & Co., 1, Ellerthorpe-street, Poplar* | 243 0 0 |
| J. Haydon & Sons | 268 8 0 | | |
| H. Bouneau | 268 0 0 | | |

*Southwark, W., Holland-street.*

| | | | |
|---|---|---|---|
| G. Foxley | £169 | J. F. Ford, 89, Fitzalan-street, Kennington-road* | £117 |
| W. Hornett | 167 | | |
| G. Brittain | 144 | | |
| Rice & Son | 121 | | |

*Stepney, Garden-street (temporary).*

| | | | |
|---|---|---|---|
| A. E. Symes | £150 0 | J. F. Holliday, 37, Anthony-street, Commercial-rd., Stepney* | £90 10 |
| J. Haydon & Sons | 120 12 | | |
| T. S. Elkington & Sons | 117 5 | | |
| Vigor & Co. | 115 0 | | |

*Woolwich, Purrett-road.*

| | | | |
|---|---|---|---|
| P. S. Howard | £246 4 | H. Groves, Stockwell-st., Greenwich* | £172 0 0 |
| Enness Bros. | 198 0 | W. Banks | 159 17 6 |
| W. Hayter & Son | 191 10 | | |
| E. Proctor & Son | 189 0 | | |
| W. J. Howie | 179 0 | | |

*Woolwich, Vicarage-road.*

| | | | |
|---|---|---|---|
| P. S. Howard | £243 0 0 | E. Proctor & Son | £184 0 0 |
| W. Hayter & Son | 199 10 0 | W. Banks, 18, Egerton-road, Greenwich* | 174 17 6 |
| W. J. Howie | 198 0 0 | | |
| Enness Bros. | 194 4 6 | | |
| H. Groves | 185 0 0 | | |

*Heating new workshops and drawing office rooms now being erected by the Council at the north-west corner of the London County Council Shoreditch Technical Institute.*

| | | | |
|---|---|---|---|
| R. F. May | £495 0 | R. Crittall & Co. | £358 0 |
| Rosser & Russell | 489 10 | G. & E. Bradley, 68 & 70, Elfort-rd., Highbury* | 347 0 |
| Clements, Peakes, & Co. | 455 0 | | |
| Strode & Co. | 369 0 | | |

*Deptford, Trundleys-road (manual training centre).*

| | | | |
|---|---|---|---|
| W. V. Goad | £990 0 0 | W. Akers & Co. | £780 0 0 |
| E. B. Tucker | 929 14 6 | F. & H. F. Higgs | 779 0 0 |
| Maxwell Bros., Ltd. | 870 0 0 | L. Whitehead & Co., Ltd. | 776 0 0 |
| Rice & Son | 847 0 0 | Holliday & Greenwood, Ltd. | 748 10 0 |
| J. Smith & Son, Ltd. | 845 0 0 | H. Groves, Stockwell-street, Greenwich* | 712 0 0 |
| J. F. Ford | 839 0 0 | | |
| W. J. Coleman & Co. | 812 1 2 | | |
| Lathey Bros. | 810 0 0 | | |

LONDON.—For building a new police section house at Balham. Mr. J. Dixon Butler, Surveyor to the Metropolitan Police, New Scotland-yard, S.W., architect. Quantities by Messrs. Thurgood, Son, & Chidgey, Charing Cross-chambers, Duke-street, Adelphi:—

| | | | |
|---|---|---|---|
| W. Nash | £4,800 | Lathey Bros. | £4,410 |
| Grover & Sons | 4,738 | Stimpson & Co. | 4,400 |
| C. Ansell | 4,646 | H. Lovatt, Ltd. | 4,400 |
| H. J. Williams, Ltd. | 4,612 | Willmott & Son | 4,344 |
| Chessum & Son | 4,603 | Messom & Son | 4,339 |
| Holloway Bros. | 4,593 | Lascelles & Co. | 4,329 |
| Higgs & Hill | 4,524 | | |

LONDON.—For the Northern District Post Office, front block:—

| | Portland Stone. | Darley Dale Stone. | Credit for Old Materials. |
|---|---|---|---|
| | £ | £ | £ |
| Perry Bros. | 8,577 | 8,484 | 100 |
| C. Wall, Ltd. | 8,898 | 8,963 | 33 |
| B. E. Nightingale | 8,948 | 9,194 | —‡ |
| Higgs & Hill, Ltd. | 8,984 | 9,225 | 10 |
| Dove Bros. | 9,045 | 9,315 | — |
| Banyard & Son | 9,185 | 9,550 | 35 |
| W. King & Son | 9,269 | 9,671 | 40 |
| J. Smith & Sons, Ltd. | 9,437 | 9,729 | 45 |
| H. J. Williams, Ltd. | 9,275 | 9,445 | — |
| Foster Bros. | 9,289 | 9,289 | 60 |
| A. N. Coles | 9,477 | 9,717 | 100 |
| W. H. Lorden & Son | 9,479 | 9,963 | — |
| J. & M. Patrick | 9,490 | 9,790 | 499 |
| A. Hudson & Co. | 9,520 | 9,595 | 20 |
| Leslie & Co., Ltd. | 9,621 | 9,878 | 36 |
| L. H. & R. Roberts | 9,779 | 10,099 | 20 |
| J. Mowlem & Co., Ltd. | 9,980 | 10,285 | — |
| J. H. Kingerlee & Sons | 10,132 | 10,982 | 59 |
| General Builders, Ltd. | 10,193 | 10,493 | 30 |
| S. Redhouse, sen. | 10,330 | 10,150 | 50 |
| T. Boyce | 10,337 | 10,820 | — |
| Martin Wells & Co., Ltd. | 10,396 | 10,757 | — |

‡ Included in prices.

NEW MALDEN.—For making up Raby-road and north ends of Penrith-road and Montern-road, for the Maldens and Coombe Urban District Council. Mr. T. B. Simmons, Engineer and Surveyor, New Malden:—

| | | | |
|---|---|---|---|
| London & County Builders | £516 18 0 | Free & Son | £460 0 0 |
| | | T. Adams | 452 0 0 |
| | | J. May | 440 0 0 |
| Fry Bros. | 513 0 0 | S. Kavanagh & Co.* | 410 0 0 |
| Cunningham Forbes | 505 13 6 | F. Thacker | 402 0 0 |
| Wm. Adamson | 463 0 0 | | |

[Surveyor's estimate, £493 18s. 11d.]

ORPINGTON.—For six pairs of semi-detached villa residences in High-street, Orpington, Kent. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington:—

| | At per pair. | | At per pair. |
|---|---|---|---|
| W. Owen | £730 | A. Pannett | £690 |

ORPINGTON.—For alterations and repairs to private residence. Mr. G. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington:—

| | | | |
|---|---|---|---|
| R. A. Lowe | £210 0 | Somerford & Son | £195 5 |
| T. Knight | 197 0 | H. Glassup* | 168 10 |

ORPINGTON.—For a pair of semi-detached villa residences in High-street, Orpington, Kent, for Mr. Davis. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington :—

A. Pannett* ..... £650

ORPINGTON.—For a pair of semi-detached cottages. Mr. St. Pierre Harris, architect :—

| | | | |
|---|---|---|---|
| R. A. Lowe .... | £699 0 | Smith ..... | £556 0 |
| T. Knight ..... | 609 0 | A. Pannett* .... | 539 13 |
| Somerford & Son | 560 0 | | |

PLAISTOW.—For underground sanitary convenience, New Barn-street, for the West Ham Borough Council :—

| | | | |
|---|---|---|---|
| Doulton & Co. | £2,003 0 0 | W. Mordey .. | £1,482 7 0 |
| A. W. Jaggers | 1,953 16 3 | J. Parsons .. | 1,477 0 0 |
| E. Tabor .... | 1,902 10 2 | Chambers Bros. .... | 1,475 0 0 |
| Harding & Son ..... | 1,777 7 0 | Foster Bros. . | 1,457 0 0 |
| G. Jennings.. | 1,718 10 0 | B. E. Nightingale ..... | 1,420 0 0 |
| G. Wise .... | 1,647 0 0 | J. W. Jerram* | 1,399 0 0 |
| W. Manders.. | 1,612 0 0 | Shelbourne & Co. ..... | 1,391 0 0 |
| Gregor & Son | 1,598 0 0 | | |
| A. E. Symes | 1,550 0 0 | | |
| Griffiths & Co. | 1,535 0 5 | | |

RUGBY.—For constructing sewers and outfall works at Brinklow, for the Rural District Council. Mr. T. W. Willard, Surveyor, Rugby. Quantities by Surveyor :—

| | | | |
|---|---|---|---|
| G. Law..... | £1,200 0 0 | F. Whitelock | £859 0 0 |
| Harrison & Co. | 1,200 0 0 | A. Jewell.... | 800 0 0 |
| T. Walker .. | 1,067 0 0 | — Holloway | 797 0 0 |
| A. Palmer .. | 1,044 0 0 | Walton & Son | 770 0 0 |
| Sutherland & Thorpe.... | 971 18 8 | A. Holme .. | 725 0 0 |
| — Wood .... | 964 16 9 | J. Young.... | 700 0 0 |
| Muirhead, Gregg, & Matthews .. | 912 2 5 | Haycock & Son ..... | 670 0 0 |
| T. Hickman.. | 890 0 0 | T. H. Cleaver | 662 0 0 |
| Langley, Harday, & Johnson .. | 885 10 3 | J. Hollowell.. | 645 0 0 |
| | | W. T. Denyer, Brinklow*.. | 590 0 0 |

SKEGNESS.—For improving and extending the sewerage and sewage disposal works, for the Urban District Council. Messrs. Elliott & Brown, engineers, Burton-buildings, Parliament-street, Nottingham :—

| | | | |
|---|---|---|---|
| Firth & Co. | £12,024 0 0 | Johnson & Langley.. | £9,770 0 0 |
| J. & T. Binns | 11,640 8 9 | C. Chamberlain..... | 9,760 0 0 |
| J. Wilson & Sons .... | 10,682 10 9 | J. Jackson.. | 9,458 0 0 |
| Parker & Sharp.... | 10,575 9 0 | Bower Bros. | 9,300 0 0 |
| T. W. Trimm | 10,447 0 0 | Loch, Andrews, & Price .... | 8,998 0 0 |
| G. Dunkley & Son.... | 10,250 0 0 | J. T. Turner & Sons .. | 8,990 0 0 |
| F. Pattinson | 10,241 13 0 | G. M Kerry & Co..... | 8,800 0 0 |
| Barker Bros. | 10,167 0 0 | H. E. Buckley ..... | 8,731 3 9 |
| Langley, Hardy, & Johnson.. | 10,143 5 0 | J. S. Dawson, Osborne-rd., Blackpool* | 8,558 4 3 |
| W. H. Strickland & Co. | 10,100 1 2 | J. T. Short | 8,354 11 7 |
| T. Smart .. | 9,985 8 0 | | |
| Langley & Westmoreland .... | 9,961 0 0 | | |
| H. H. Barry | 9,825 0 0 | | |

SKEGNESS.—For cast-iron pipes, castings, etc., for the Urban District Council. Messrs. Elliott & Brown, engineers, Burton-buildings, Parliament-street, Nottingham :—

| | | | |
|---|---|---|---|
| Cochrane & Co. ..... | £1,391 1 0 | Clay Cross Ironworks Co., Ltd. .. | £1,317 11 6 |
| Cochrane & Co., Ltd. .. | 1,348 19 4 | Stanton Ironworks Co., Ltd., Stanton, near Nottingham* ..... | 1,262 16 0 |
| Staveley Coal & Ironworks Co., Ltd. .. | 1,324 4 2 | Howell Ironworks Co., Ltd. ..... | 1,254 10 0 |
| Sheepbridge Ironworks Co., Ltd.' .. | 1,319 13 0 | | |

PRESTON.—For 2,000 tons of c i, pipes, etc. (waterworks extension, Contract No. 1), for the Corporation. Mr. T. Cookson, A.M.Inst.C.E., Town Hall, Preston :—

Stanton Iron Works, Co., Ltd., Nottingham* } At prices specified in their tender; schedule prices.

WALTON-ON-THAMES.—For 520 yds. of 9-in. stoneware pipe sewer, etc., in Sydney-road, for the Urban District Council. Mr. R. Wilds, Engineer and Surveyor, Council Offices, Walton-on-Thames. Quantities by Engineer and Surveyor :—

| | | | |
|---|---|---|---|
| A. C. Soan .. | £299 15 0 | S. Atkins .... | £246 10 0 |
| S. Kavanagh & Co..... | 276 2 7 | E. Potterton & Co., East Molesey* .. | 216 0 0 |
| C. Horsell.... | 263 6 4 | | |
| G. Hebburn .. | 257 3 4 | | |

[Surveyor's estimate, £232.]

WANSTEAD.—For 1,420 ft. run of 12 in. by 6 in. Norwegian granite edge kerb, Blake Hall-rd., for the Urban District Council. Mr. C. H. Bressey, Surveyor, Council Offices, Wanstead, N.E. :—

| | | | |
|---|---|---|---|
| T. W. Marsh.. | £178 5 10 | A. W. Porter | £115 0 0 |
| British Paving & Granite Co. | 178 0 0 | J. Jackson .. | 113 0 0 |
| T. Adams .... | 149 0 0 | Parsons & Parsons ..... | 113 0 0 |
| W. Manders .. | 142 0 0 | W. & C. French, Buckhurst Hill* ..... | 110 0 0 |
| Wilson, Border, & Co..... | 133 0 0 | | |
| W. Thomas .. | 119 0 0 | W. Griffiths .. | 107 0 0 |

WEST DRAYTON.—For new Council schools for infants, for the Middlesex County Council. Mr. H. G. Crothall, Surveyor of School Buildings, Guildhall, Westminster, S.W. :—

| | | | |
|---|---|---|---|
| Godson & Son .... | £3,833 | Kearley ..... | £3,413 |
| Patman & Fotheringham ..... | 3,823 | Heath ..... | 3,400 |
| Goddard & Son .. | 3,739 | Brown ..... | 3,296 |
| Minter ..... | 3,686 | Dorey..... | 3,251 |
| Kingerlee ..... | 3,659 | Hanson ..... | 3,234 |
| Blackburn..... | 3,592 | Knight*..... | 3,103 |


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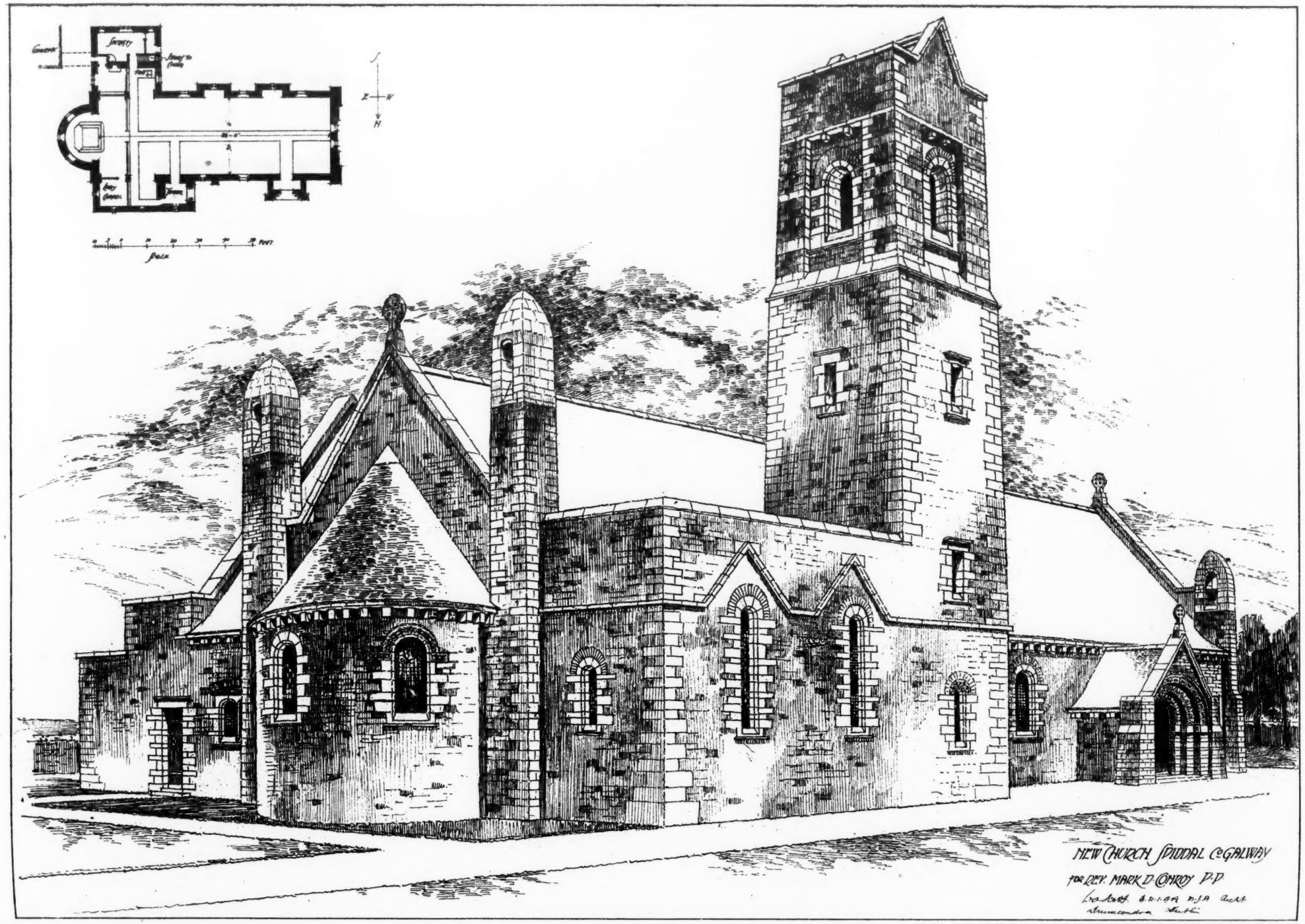


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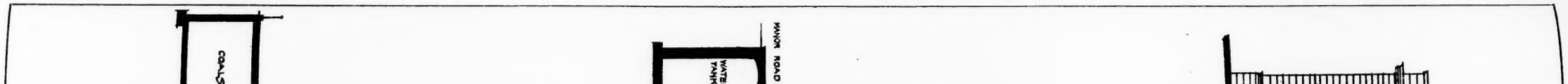

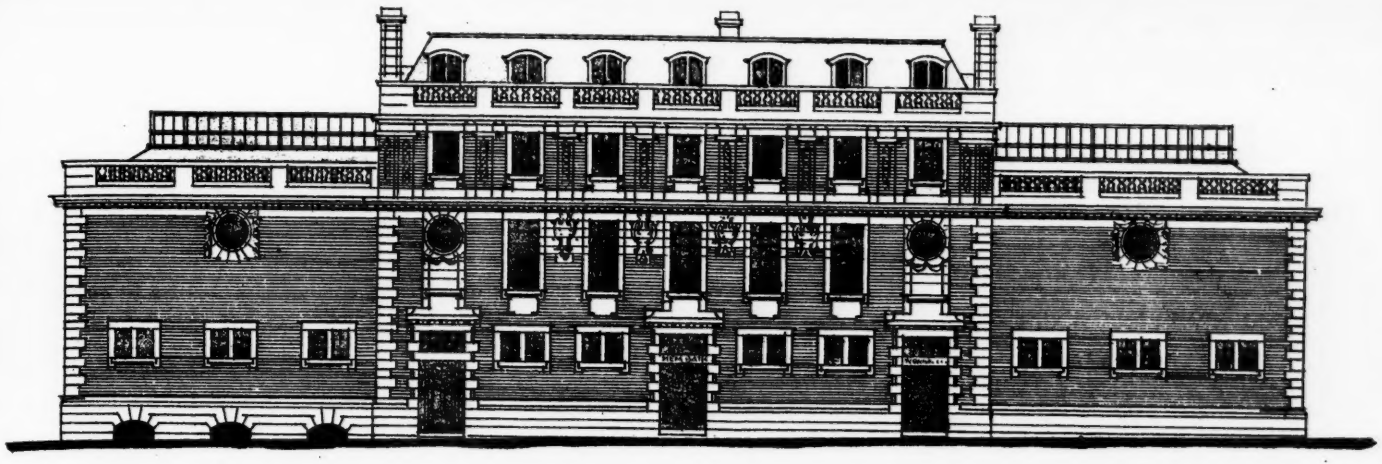

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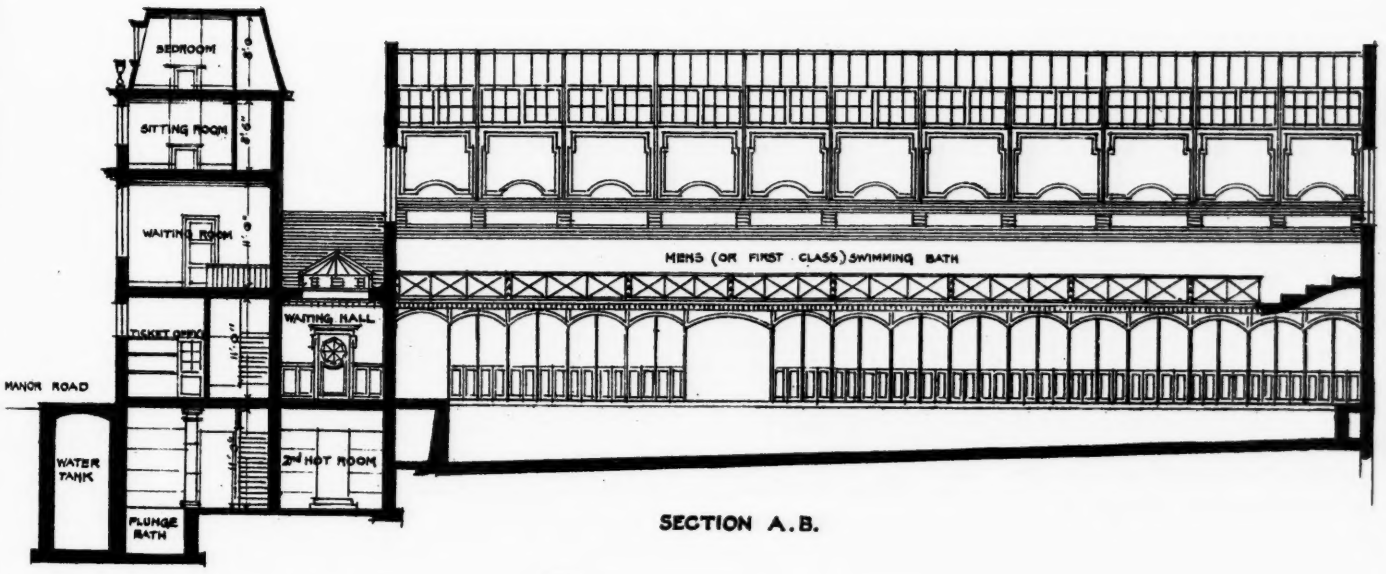


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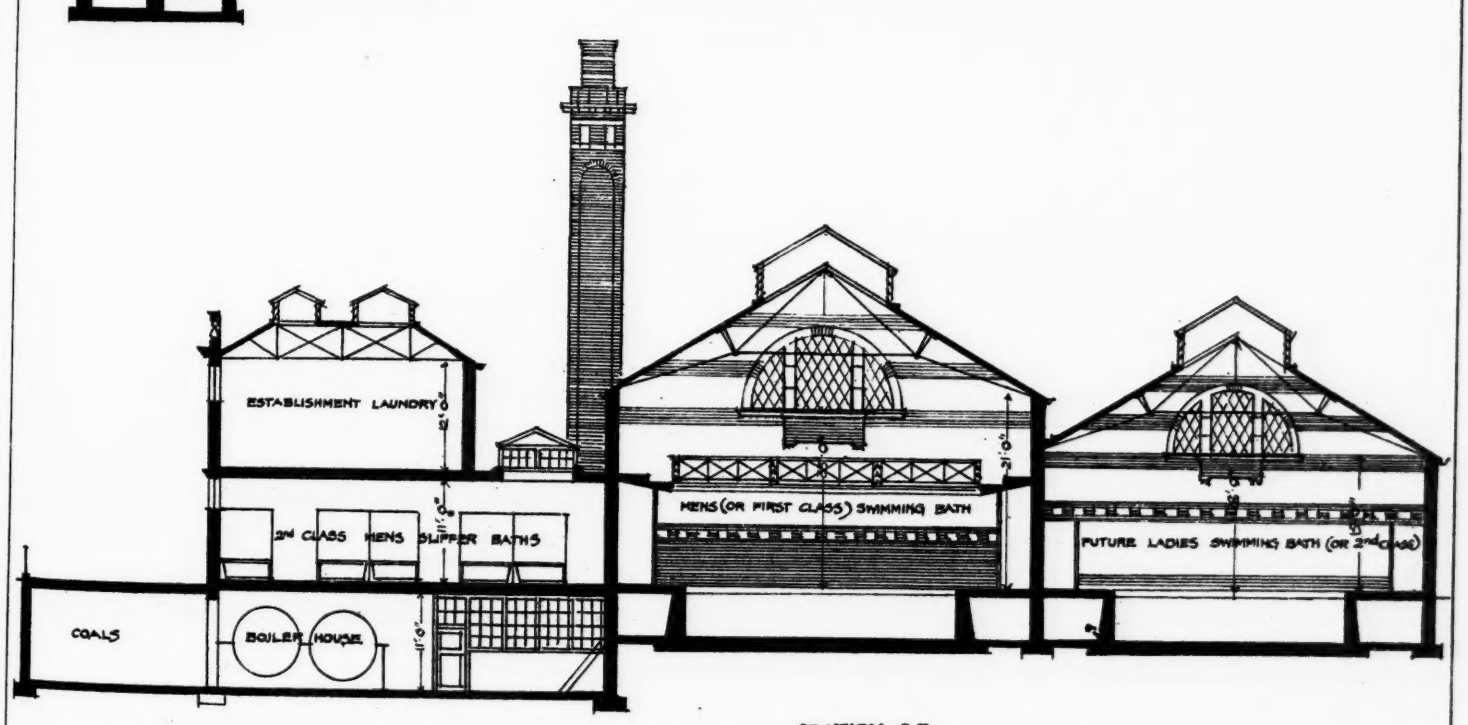


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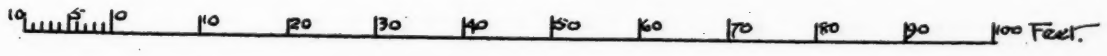


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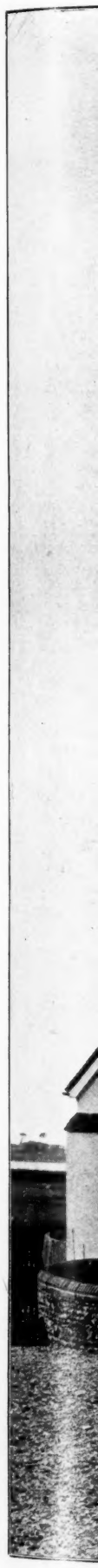

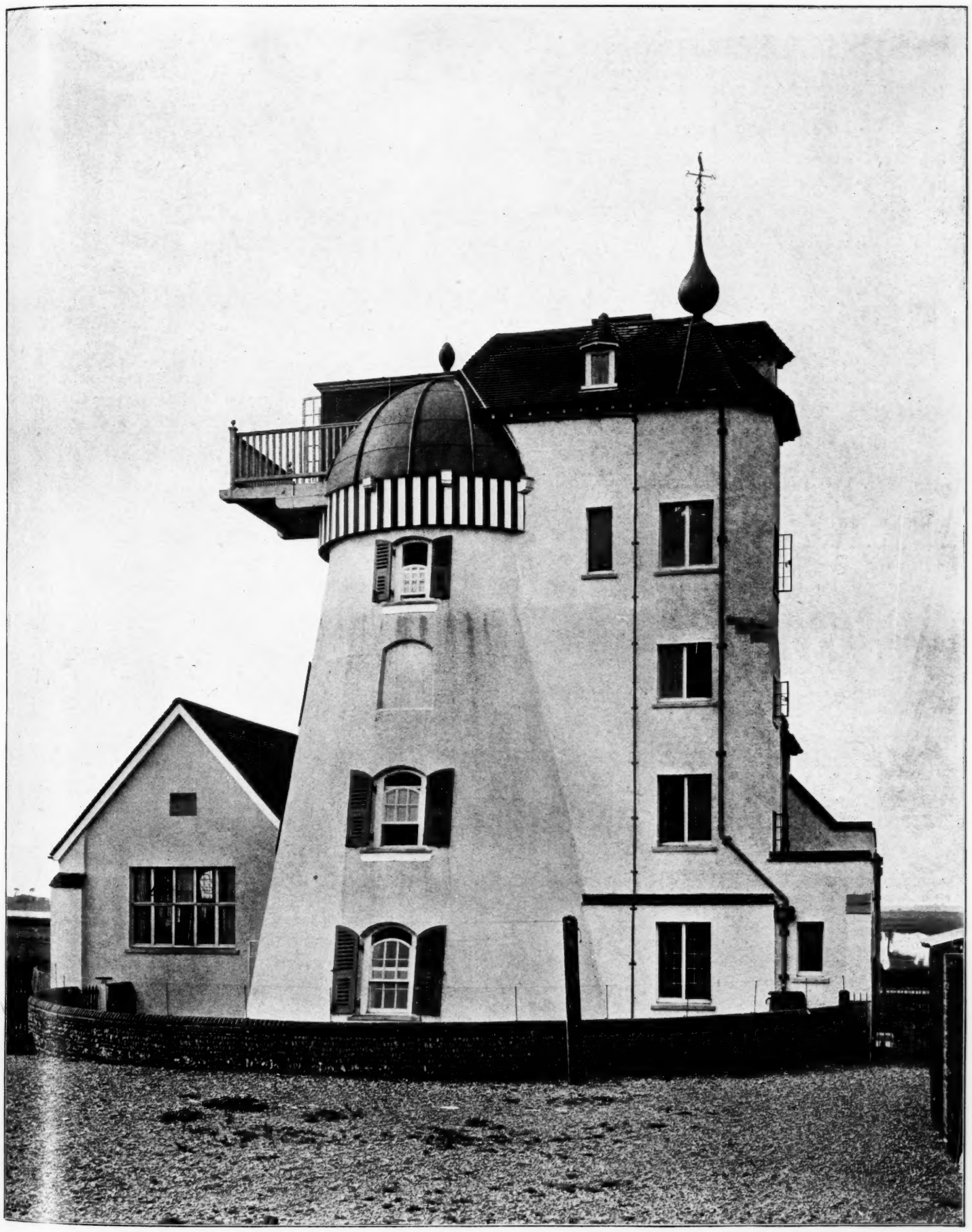

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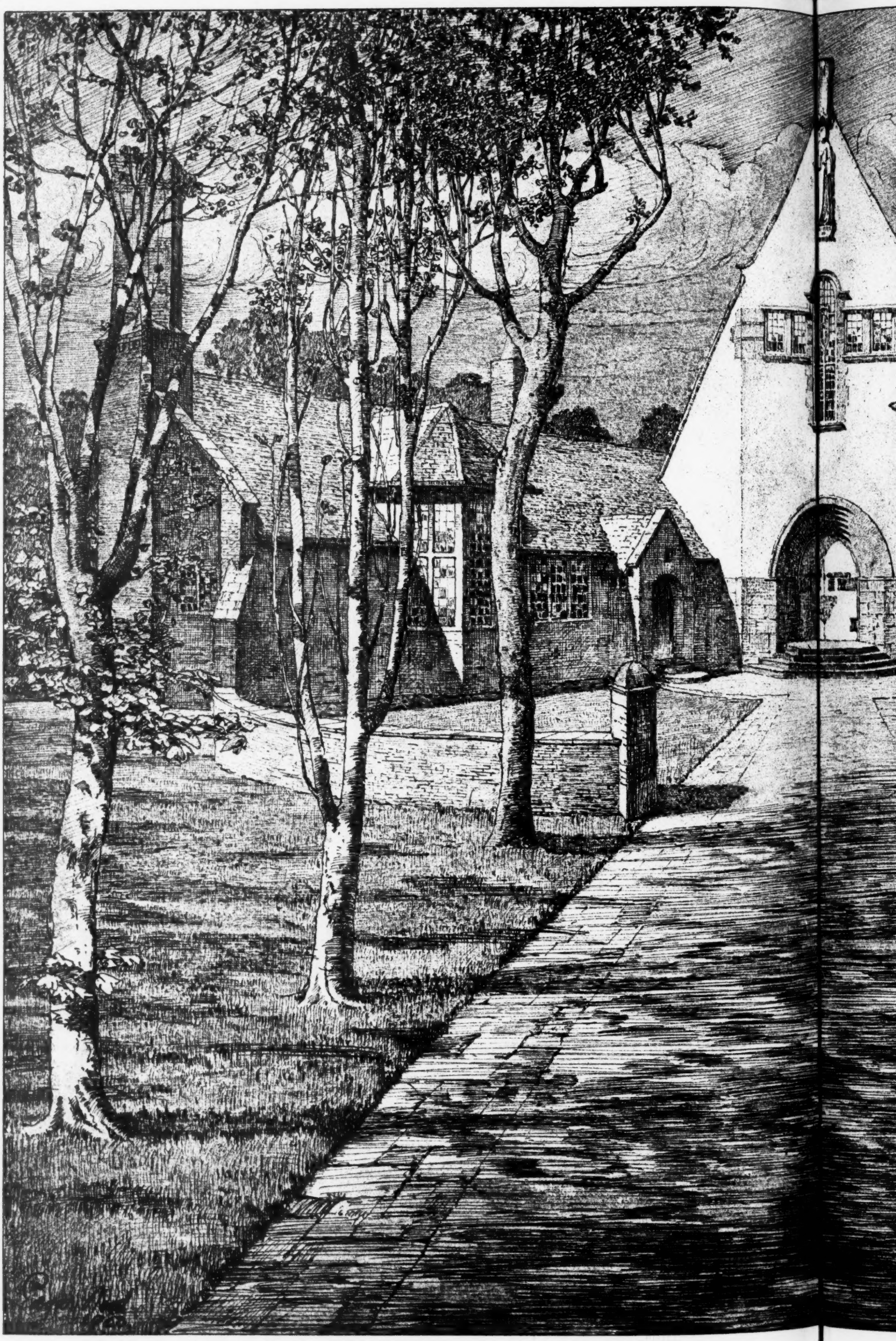

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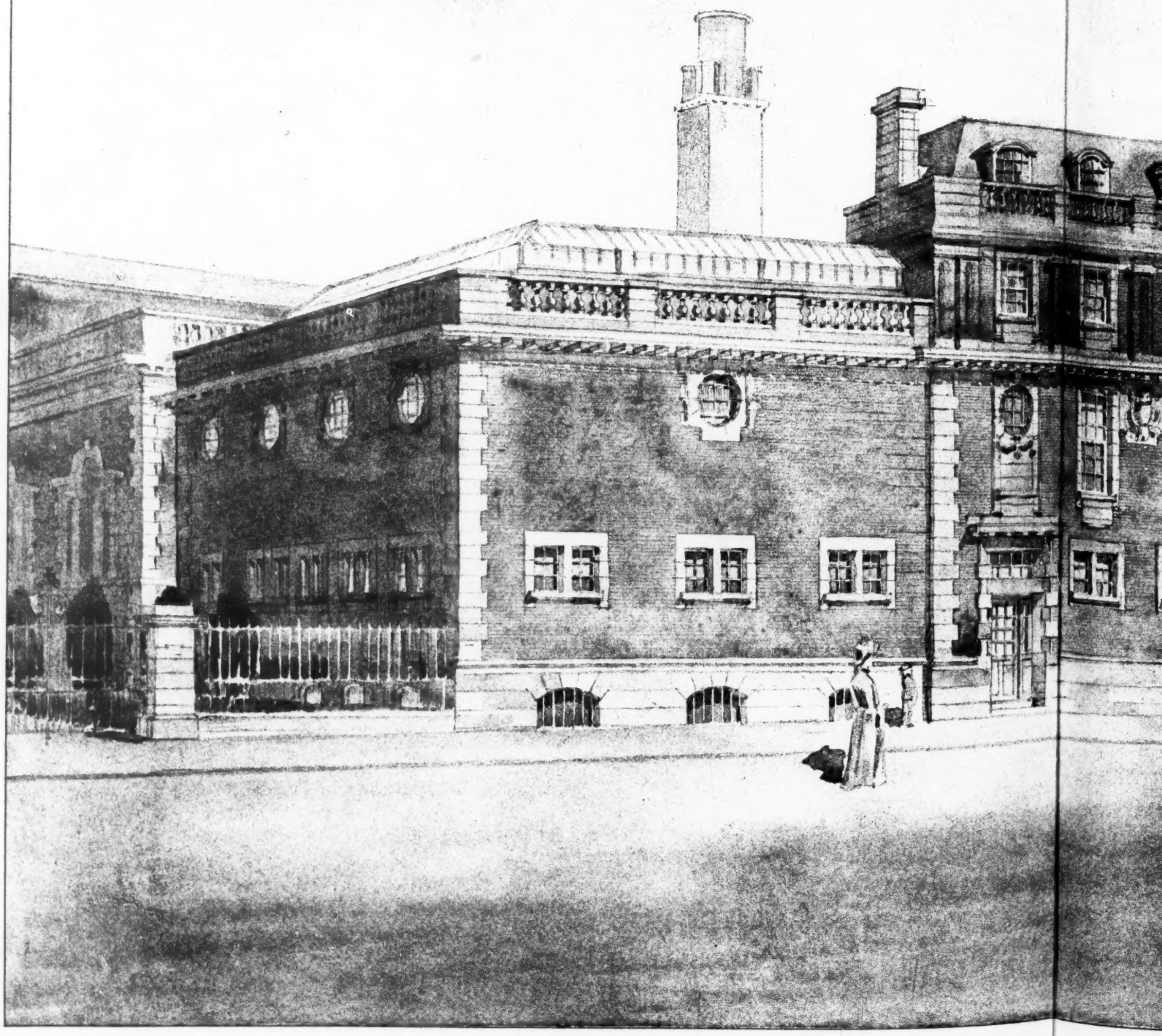

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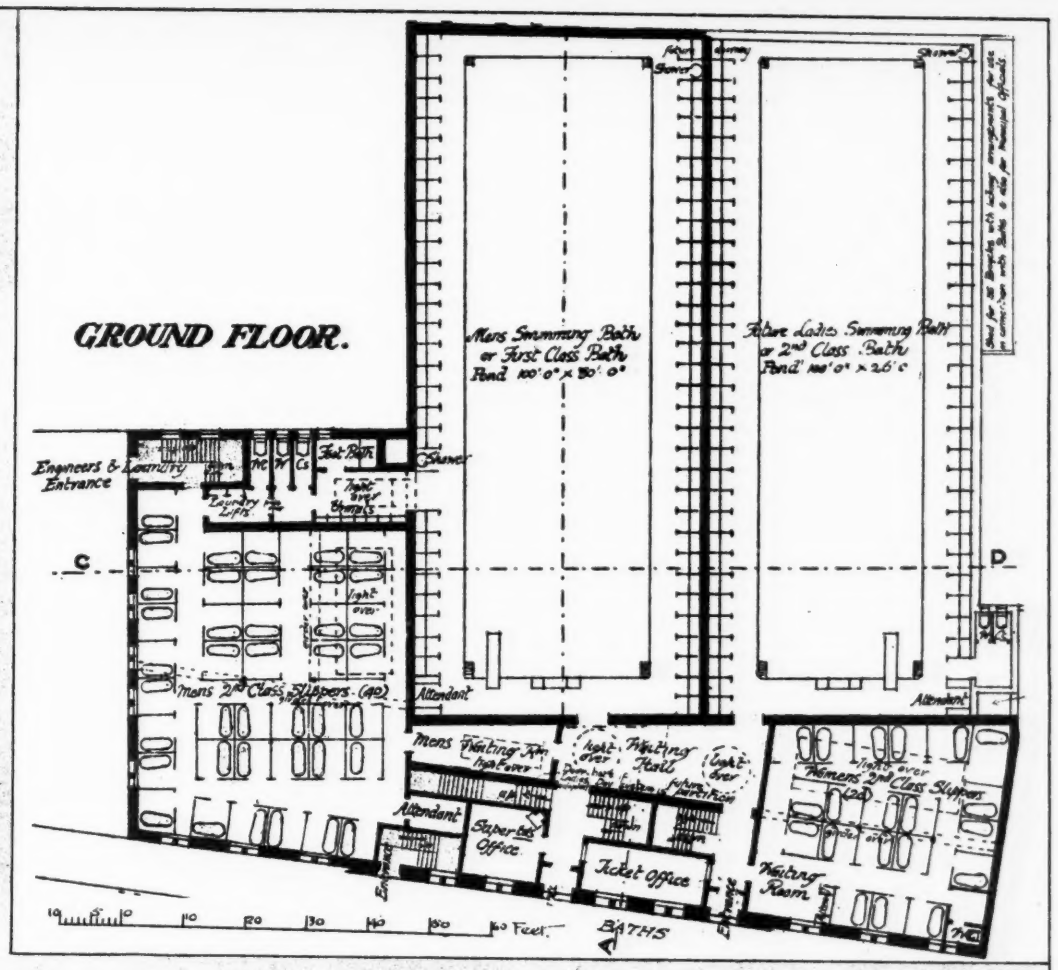


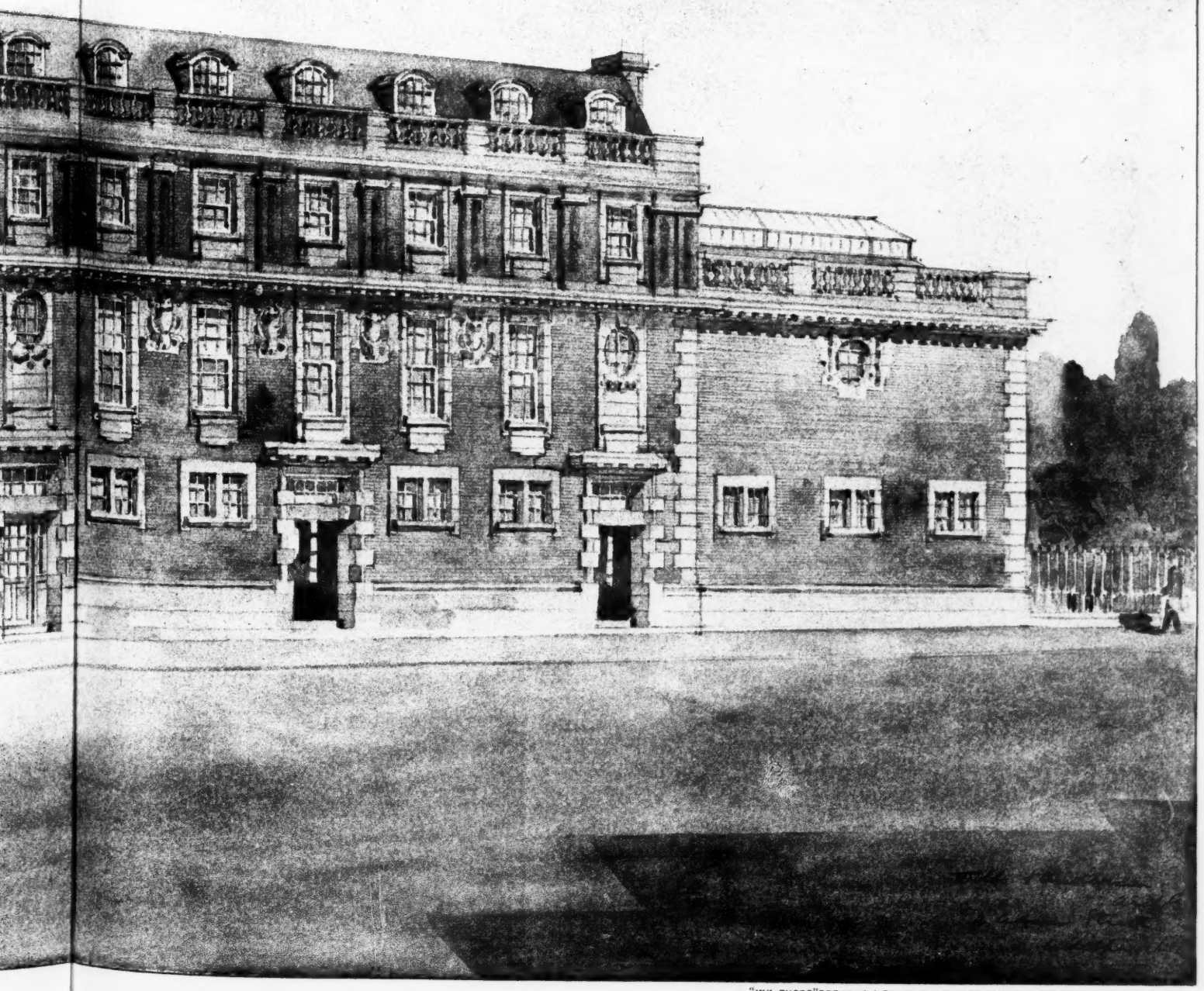

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